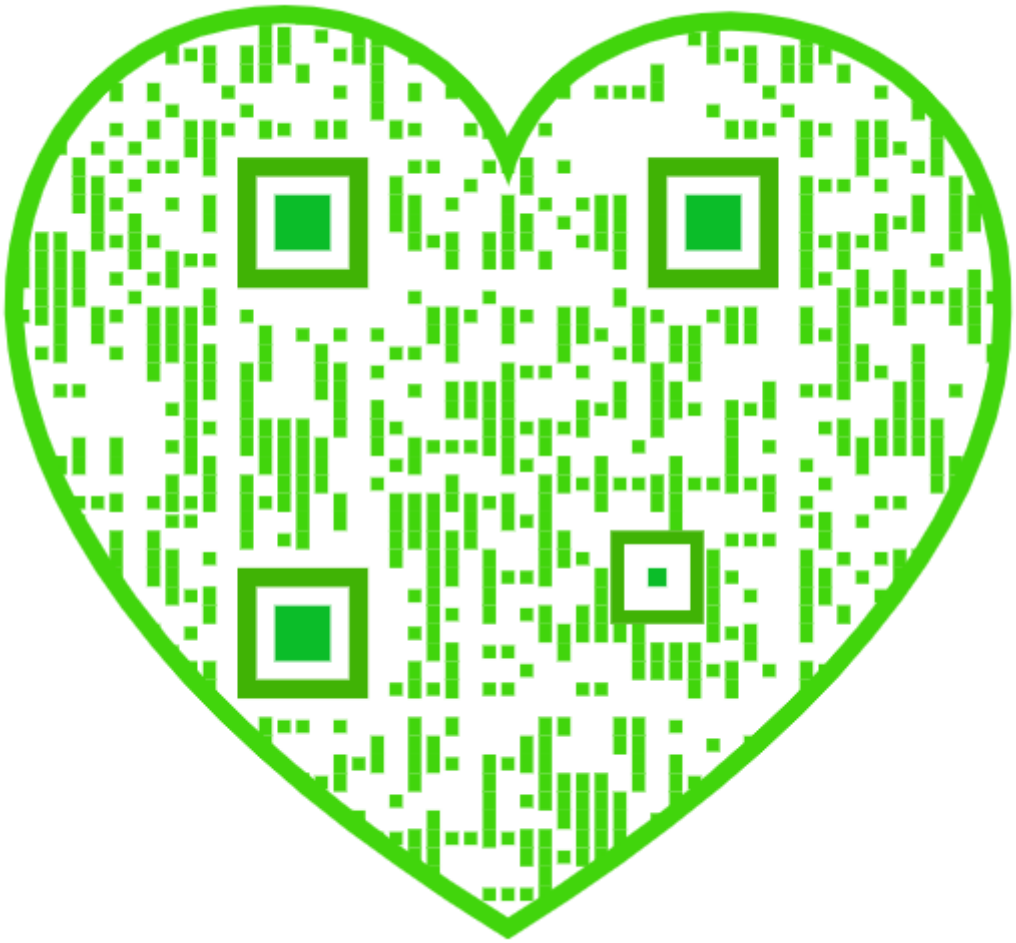
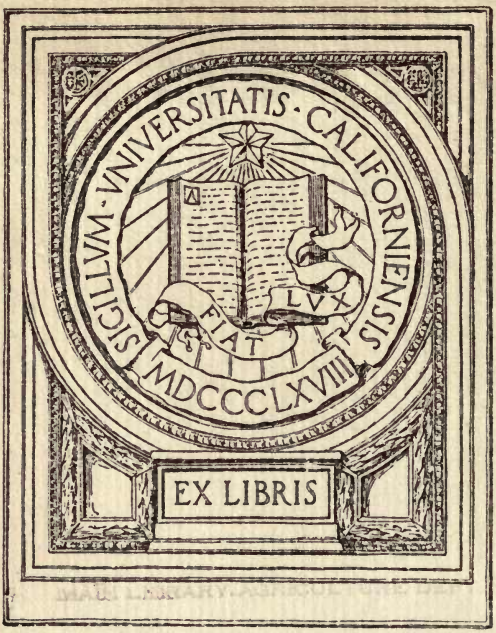
VEGECULTURE

HARRY A. DAY, F.R.H.S.

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VEGECULTURE

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SPADE-CRAFT

VEGECULTURE

HOW TO GROW VEGETABLES, SALADS, AND HERBS IN TOWN AND COUNTRY

BY

HARRY A. DAY, F.R.H.S.

SECOND EDITION

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PREFACE

THE advent of this book occurs at a very auspicious time. The great European War has been instrumental in revealing unpleasant facts concerning the nation's stores of food. The high price and comparative scarcity of vegetables, for example, has brought home to every one the loss which is yearly incurred by allowing the ornamental to overrun and overshadow the importance of the useful. In many gardens the vegetable quarters appear to exist as painful necessities rather than first-class adjuncts to the household and national well-being, by providing healthful food materials. The pleasure of cutting, cooking, and eating one's own vegetables is one which the possessor of even the smallest plot of garden ground may enjoy, despite the limitation thereof; and I trust this book may be useful in encouraging and helping many a hitherto neglected piece of ground to assume an air of prosperity, and be a source of profit to its cultivator.

I do not pretend to claim anything *new* so far as general cultural principles are concerned; but, wishing to keep on the practical side, I have adopted the system of grouping together those vegetables possessing cultural affinity, rather than an arrangement based upon botanical, alphabetical, or other formal considerations. Such grouping of subjects, too, facilitates and assists the selection of vegetables for a correct rotation of crops and the choosing of suitable subjects for the quality, consistency, and position of the soil at command. As both these considerations have a most important bearing upon the successful growing of vegetables, a system of groups that indicates plainly the calibre and manner of growth of any vegetable should prove most useful to the cultivator.

I have introduced to notice some vegetable products which are, as a rule, but imperfectly understood and rarely cultivated in any serious quantity with an eye to general utilization as an addition to food supplies; and in doing this, I do not wish to

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be guilty of alluring gardeners from the straighter and more useful paths of ordinary vegetable culture into those which may prove somewhat uncertain, misty, and unprofitable. However, while much valuable time and material can be wasted in experiment and trial, there is no reason why a moderate indulgence in "new" vegetables of repute should not be undertaken by anyone who has sufficient room to spare and time and means to afford all that may be required in special culture. Some of these almost unknown and usually untried subjects are real delicacies, and worthy of serious attention; others, again, have to be very well grown if they are to successfully appeal to popular taste; yet the very same thing may easily have been said of the Potato and Tomato at the time of their introduction to universal notice.

The points I wish most to emphasize in this volume are: The urgency of a more serious study of the soil, its composition and functions; a better acquaintance with the actual needs of vegetables in the way of culture, rather than a elementary, fragmentary, superficial knowledge of the soils, manures, and general environment they may have affinity for. I grant that elementary knowledge is useful, but it should be backed up by a thorough appreciation of scientific basic facts; for I maintain that a studious gardener can, by application of mental and manual effort, wrest from the most ungrateful, unlikely soil a fair return—and is it not true that we all have no alternative but to make the best of what we possess, rather than sigh and mourn because we have not the ideal?

The kitchen-garden is an integral part of household economy. That fact is insufficiently realized by many a householder whose chief source of anxiety lies in the upkeep of the domestic equilibrium. There can be no doubt of this, because, if it were otherwise, more vegetables would be grown; even the smallest, almost hopeless plot of land would be utilized in a laudable attempt to produce something towards provisioning the home. I am so impressed with these conditions that I feel I cannot do better than devote much space in this book to the enlightenment and encouragement of those who are unfortunately situated, reviewing the black side as well as the brighter outlook, and giving equal attention to the favourable and unfavourable. It is an easy matter to lay down rules where everything seems perfectly in balance and opportunity is great and advantageous; but it is far more interesting—and difficult—to lay down equally effective rules for adverse circumstances. In this book through-

out I have endeavoured to hold impartial balance. I realize that there are many small contrivances and simple methods which the possessor of a country garden would pass over with scorn and contempt, simply because he has no necessity for their use; but these same small and simple matters are very essential to the garden of humble dimensions and limited opportunities; and there is no reason why a boon should be withheld from one section of the community because it may not be strictly orthodox or conventional. I therefore add anything which may help to all departments contained in this book, hoping that someone may find a beneficial use for it.

In order that the reader's view of the whole process of vegetable culture shall be clear, uninterrupted, and concise, and that a sure grasp of the prime essentials shall be obtained, I have relegated such incidentals as recipes, processes, constructions, definitions, as well as descriptions and explanations of materials, etc., to an Appendix, which will be found at the end of the book.

I invite correspondence from any reader in genuine difficulty or doubt, and will endeavour to assist in solving the problem thereby indicated.

"Kildare,"
Longlands Park Road,
Sidcup, Kent.

HARRY A. DAY

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INTRODUCTORY REMARKS

THERE are few books written upon vegetable culture that do not emphasize those essential rules which regulate kitchen-garden procedure, i.e.: Better culture, more space, quality before size, gathering at the best stage, and improved cookery; yet there appears to be quite as much necessity to point to these things persistently as there has been in the past, for although great improvements exist, much more could be done in each of these directions. Great credit is due to the many societies and individuals who have endeavoured to awaken public interest in vegetable culture; but a better understanding as the result of study or acquired interest is needed to make the growing of vegetables as popular and as profitable as it ought to be, and can be.

The Model Kitchen-Garden

The model kitchen-garden, to my mind, is one that combines the floral with the vegetable, not forgetting a certain proportion of fruit to make the garden complete and self-containing. I do not wish this statement to be read in the light of the crowded, jumbled mixture that one so often sees, neither do I claim any sympathy with the silly vapourings the great war has induced many to utter concerning the growing of vegetables in the flower-border. Those who write about or regard the combination of Cabbages and China Asters with seriousness have certainly passed beyond the limits of common sense. That one *can* with profit grow certain fruits and vegetables in the floral quarters is quite true; but the qualities of such vegetables must always be on the ornamental-utility basis; and environment must also be taken into consideration. For instance—Beet as an edging to a wide border of perennials, or an occasional specimen as an alternate item in a general scheme of colour effect; variegated Kales as a "first line" in the shrubbery; an amalgamation of both vegetables in a general foliage scheme—here we may have the artistic and useful in perfect agreement and alignment, without destroying the effect of either, or both. Again, there is a decided advantage

to be secured by the planting, at wide intervals, of such subjects as the Tomato, Japanese Cucumber, or Ornamental Gourd, trained to 4-ft. canes, in the border; the gain is at once evident in both the ornamental and useful sense. Trained to a single stem, and kept within circumscribed limits of height and girth, these vegetable-fruits would not interfere with the other occupants of the border half as much as a rampant, struggling perennial flower of doubtful decorative value.

This view relates, of course, principally to the smaller garden, where space is limited, and a desire exists on the part of the owner to allot a fair share of such space to the three principal departments of his garden in turn. A judicious mixture, in this case, keeping in view the ornamental aspect of the whole, would be most profitable. The wonder is that some such system is not generally adopted! I consider that the reason for its rarity lies chiefly in the slavish adoption of too severe a line of demarcation—a too strict dividing-line between the kitchen- and flower-gardens. That is all very well where ample space is at the disposal of the cultivator; but in the small garden such division is usually the result of a misinterpretation of certain regulations which may be supposed to govern good gardening, and a worship of the formal and conventional.

Possibilities versus Realization

When I have on occasion shown a fine painting or photograph of flowers, vegetables, or fruits to certain persons, I have been met with this dictum: "All very fine, but such specimens as these can *never* be grown in an amateur's garden! The professional gardener, who can sit beside his plants and watch them grow, and coddle them into perfection, has the advantage of the amateur, and often he has the choice out of large stock! These pictures are useless, misleading, impossible!"

If these individuals could only allow their better judgment to have fair play, they would perceive that these resplendent, perfect-petalled flowers, immaculate leaves, shapely vegetables, and rounded, beautifully-coloured fruits of luscious appearance are but TYPES—an example, the object of attainment, the guide and reference-book wherewith to refresh our memory, the stimulus to back up our energies, the pattern upon which our ideas are based and worked out through perseverance and study!

Unfortunately, matters are not always represented in such a light. Insistence is often placed upon the certainty that, if suitable seeds are sown, the highest results will be forthcoming.

But there is a wide difference between the nurseryman, seeds man, and exhibitor, on the one hand, and the cultivator, proficient or otherwise, on the other. The former group are quite right in their asseverations: the potentialities are existent in the subjects—possibilities and probabilities await development; but the realization often falls far short of expectations in inexperienced and time-limited hands!

Still, the veriest tyro should never be afraid to aspire even to the highest, and extremely creditable achievements often result from careful and persistent endeavour, maybe under adverse conditions. There are difficulties in every garden, however perfect and well-balanced; and it must be the cultivator who overcomes such difficulties—they are entirely in his hands; therefore he must not rely upon the products of the nursery and seed-bed to accomplish that which only he can do by patient perseverance and intelligent labour. The ideal garden may not be within the gardener's reach; but an appreciable advance towards it may be made by persistent endeavour.

Vegetables versus Flowers

I am not in entire agreement with the usual practice of treating the kitchen-garden as if it were a necessary evil instead of a source of profit and health. It is a snobbish prejudice that would relegate the kitchen-garden to a corner somewhere well out of sight and mind. That the vegetable quarters should be divided in some way from the floral department of the garden I fully endorse; but let it be done with justice. I have visited some kitchen-gardens that are screened from view by a tall, thick-set, beautifully-trimmed hedge of Privet or other bushes, which has effectually excluded light, air, and a percentage of moisture from both the vegetable- and flower-gardens, not to speak of the blood-sucking, life-stealing roots that are draining away the nutriment intended for the vegetables! Where the garden is very large, of course, the walled-in or hedged kitchen-garden becomes a very proper and permissible affair, because the ample space ensures full exposure to the life-giving sunshine and air, and presents no obstacles to the perfect development of the inmates of such a garden; but in his cramped space, the small gardener who allows trees, shrubs, etc., to rob the soil and throw an unwanted shade over vegetables pining for sunshine—just for the sake of formal appearance—is adopting a suicidal policy.

The only results accruing from such management are seen in the indifferent vegetables produced, and as often as not the

kitchen plot becomes the hidden receptacle for all kinds of rubbish that is necessary to put out of sight, and is soon transformed into a dust-heap.

Is secrecy concerning vegetables necessary? "They are so unlovely!" may be the excuse put forward. Well, let me point out that the kitchen-garden may be effectively screened from view—or, rather, the parts of it that may be unsightly—without recourse to the repressive measures I have indicated. Vegetables require all the light and air they can get, therefore the site should be an open one. The judicious planting of fruit trees—a wise procedure!—will afford whatever shade may be required in summer; and for a screen—there is the Loganberry, the Blackberry, cordon fruit-trees, and not too rampant climbing Roses, which may be profitably employed. Certainly, screens are often required as a protection against wind, storms, etc.; but that is an entirely different matter.

The Household Kitchen-Garden

I have studied small vegetable-gardens attached to the dwelling-house a good deal lately, and I find that much the same state of things prevail in nearly every case—the kitchen-garden is not only planned to exist as far from the house as possible—with which no one will quarrel—but it is hemmed around and completely shut in by the inevitable screen which divides it from the flower-garden, and contains far more fruit trees and bushes than the small plot can accommodate. These latter, it may be conceded, are planted when of small stature and girth, and it probably never occurs to the planter that, if not curtailed, those small twigs and slender stems will, in five years' time, have become increased enormously in every direction, and that those roots, which can at planting-time be removed from the ground by a child, will in a surprisingly short time defy the efforts of the strongest man.

The Allotment

The householder should turn his eyes for a moment to the allotment. Here is an excellent, practical example of what the kitchen-garden should be, clothed in a more artistic garb. The allotment is rough and ready, but intensely productive; its chief feature and probable secret of prosperity is its *open* nature—a full exposure to sun and air, with free action of wind, rain, and frost upon the soil—there is nothing whatever to hinder the beneficent work of every element in its season upon the plot and the occupants thereof. Here, I contend, we have a model for the kitchen-garden formation, rough, but productive.

The chief requirements of a small kitchen-garden are: An open situation; the provision of a moderate shade in convenient portions by means of tall-growing vegetables and cordon or espalier fruit trees and bushes; naturally shaded ground to be afforded relief from further shadow, if possible, or used only for those plants requiring protection from sun or hard weather; the drastic elimination of weeds and all superfluous vegetation; the frequent use of salt, soot, lime and ashes, to kill and keep away insects and sweeten the soil; a well-thought-out laying-out plan; and a wise choice of subjects to be grown.

Vegetables in Town Gardens

It is astonishing how far the good growth of vegetables in town—even in city—gardens can be accomplished. Evidence of this is very public in the case of the Church Army waste-ground allotments in the city of London. Where the demolition of buildings have taken place, and no further erections substituted, the bricks, timber, and other débris has been removed or perhaps piled away in one corner of the piece of ground, and willing and enthusiastic hands have converted, in a surprisingly short space of time, the dust-heap into a smiling garden of vegetables that would do credit to many a cottager in the heart of the country!

Such successful enterprise must put to shame anyone possessing a fair amount of garden lying uncultivated and idle! When one, in passing these allotments, stops for five minutes to contemplate the neat rows of flourishing vegetables amid a scene of desolation, and then, in leaving the spot, glances up at a murky sky, and realizes the presence of a smoky, stifling atmosphere, only one word seems to fit the situation, and that is—"Marvellous!"

I was privileged to see, at the beginning of July, an exhibit of produce from one of these allotments, at the Royal Horticultural Hall, and it seemed to me an impossibility that such a collection of vegetables could have been secured from a city waste-heap so early in the season! Yet there was no doubt about it, for I had only to step outside the Hall, and there, a short distance away, were the very "allotments" from which the vegetables came, an oasis in the midst of a desert![1]

[1] If the reader would like to know more of this unique and successful scheme, I am sure the Rev. Prebendary W. Carlile, of St. Mary-at-Hill Church, E.C., the initiator of the idea and head of the Church Army; or Mr. H. T. Bennett, Hon. Sec., 55, Bryanston Street, Marble Arch, W., would be pleased to give every information.

Here, surely, is sufficient encouragement for the town gardener to attempt something in the way of vegetable-growing, be it on only a small, humble scale! And it may assist the townsman in his efforts if some of the pitfalls that may lie in his path are pointed out, for he will then be enabled to avoid them. Moreover, these mistakes are not confined to the small garden; they occur frequently in gardens blessed with a far superior environment!

Choice of Subject

The choice of subjects to be grown is a serious stumbling-block in many a town or suburban gardener's path—I mean a wrong choice, a mistaken choice, a pandering to personal fancy rather than a subservience of all questions to actual needs, means, and circumstances. One can grow one's favourite vegetable if the soil, situation, and aspect are suited to that vegetable, or can be made suitable; otherwise, time and energy expended in such cultivation is sheer waste and grievous disappointment. It is far better to accept the inevitable, however disappointing, and select another vegetable—the nearest approach to the ideal one which may be impossible to grow successfully. Of course, there is often much latitude in cultivation, and many methods of circumventing the difficulties of site and soil, and if the gardener has a good stock of patience, time, and money available, he may cheerfully undertake anything in the way of making circumstances more amenable to desires; indeed, if the ground at his disposal is his own—then let him spare no trouble.

To quote examples of choice of subject: I fail to see the use of growing vegetables that demand considerable space, such as Potatoes, Peas, or Celery, with the addition, most likely, of fruit trees and bushes, in a garden of very small dimensions; and yet, again, it is sheer folly to allow a good-sized open space to be monopolized by petty crops of salads or indifferent vegetables that would grow equally well, perhaps better, between rows of more valuable main-crop subjects. In the small garden, a succession of vegetables, of a kind that will grow quickly, or the specializing of a couple or so of extra choice vegetables, should be aimed at. For example, a well-grown head of Cauliflower or Broccoli, a sweet "spring" Cabbage, or a few of the choicer salad-vegetables would be better appreciated from a small garden than a few pounds of Potatoes. Not that I wish to decry or ignore the joys of a dish of real "new" Potatoes from one's own garden; they are indeed a luxury to be sought

after; but here again the small gardener unfortunately commits the serious mistake of planting main-crop varieties requiring long growth, instead of the quickly-developing early sorts, such as Sharpe's Express, Puritan, or the Ashleaved varieties.

I think much of the trouble centres around that word "early." In the case of some people, it is really a misnomer, for it is taken to indicate a class of vegetables, of delicate constitution, fitted only for the forcing-house or intensive cultivation; whereas the "early" sense indicates precocity, quick growth, early maturity. As vegetables with these qualities are usually small, they are often looked askance at; yet they are the most profitable of all, for they come into use at a time of scarcity.

The Ideal

Fortunate indeed is the individual who becomes possessed of a garden wherein soil, site, and aspect combine to produce the ideal! Such a garden, unless its extent affords a variety of situations from which a choice can be made, is a rarity, and greatly to be prized. However, nothing but good can result from keeping the ideal before us, as a pattern whereby to weave our garden schemes into something approaching perfection; for skilful and intelligent manipulation can achieve wonders of transformation. A few words upon the ideal vegetable-garden, therefore, should prove helpful.

A flat surface is to be preferred for most ordinary crops, but the sloping portions of the garden may be utilized for hastening or retarding certain crops. A slope to the south or east, it may be noted, is far preferable to a slope towards the north. As the sun is the agent in bringing vegetable life to perfection, a moderate exposure to sunshine, winter and summer, and a free current of air, is very necessary. If the ground has no shelter on the north side, some contrivance to produce one should be invented. A wall on that side will create a south border for trained fruits and seed-beds on gentle slopes; and this would be favourably situated for sowings to produce crops that are wanted early in the spring. A slightly elevated and sloping piece of land, facing the east, moreover, will be admirably situated for the first crop of early vegetables, and, indeed, of many other things, for the frost will be melted there long before it disappears from other parts of the ground.

Trees and shrubs in the immediate vicinity of a garden often prove injurious by intercepting the sun's rays, and preventing free circulation of air. To be well placed in all respects, a garden should have efficient shelter on the northern and

eastern sides; the south-west being another quarter against which some protection is often desirable. Very high and very low positions are equally unfavourable; in the first case, the ground is exposed to wintry blasts and the occasional droughts of summer; and in the second, severe frosts, and excessive damp in autumn are hard to circumvent.

Things to be Avoided

A "border" is a narrow strip of garden soil, as distinguished from the bulk of ground in the open, running along the garden fence or wall. In the formation and laying-out of the kitchen-garden, whatever the shape, aspect, or quality of the soil, it will be found very advantageous to secure one or two narrow borders under a wall or fence; or, perhaps, there may be a continuous border all round—on one side enjoying early sun, and the other side being shaded. These borders are of great value. In early spring, when the first sowings of Lettuces, Cabbages, Horn Carrots, and other early subjects are made, a well-drained border under a wall is an ideal place for them, especially if it obtains the morning and mid-day sun. All tender vegetables, sown or planted a little before the usual time, would do well in such a position; and many of these may be safely sown there at a time when they would surely perish if exposed to the severity of the weather in the more open ground. The first crop of Potatoes, and a small but welcome quantity of every summer vegetable, may be thus obtained a fortnight earlier. From seed-beds in such a position, plants for future transplantation may be advantageously raised. The borders exposed to the north will not be less useful, for the practical gardener will appreciate a shady spot as much as he does plenty of sun elsewhere; and many subjects may be had late in the season.

The Utility of Borders

The walls and borders, if arranged with a continuous walk around them, will leave an open space clear for general operations. Here *utility*, not *fancy*, must determine the plan or lay-out of the garden. The central portion of the ground, then, should first be divided by narrow paths into several square plots, or beds, of soil. Permanent walks—unless the size of the ground renders such necessary—are undesirable; narrow alleys, to be turned over into garden ground every year and fresh ones made, should be the procedure; and no path need be wider than will allow of a wheelbarrow to pass along it freely. The plots thus marked out are apportioned to the various vegetables desired

General Laying-Out

to be grown, choosing the site to suit the subject, and treating it accordingly; and the dimensions of each plot will, of course, coincide with the size of the crop it is intended to carry. These necessary details being satisfactorily arranged—long before planting or sowing time—it will be as well to commit the arrangements to paper in the shape of a detailed and descriptive plan.

Much benefit will be derived from an adherence to the usual and delightfully old-fashioned style of kitchen-garden—that which combines to produce an artistic admixture of vegetable, fruit, and flower. This is usually effected by the planting of a belt of dwarf bush, cordon, or espalier fruits—(regulated by the extent, shape, and position of the garden)—about four to six feet from the principal pathways, thus cutting off a serviceable border from the main portion of the vegetable quarters, which can be utilized with charming effect as a flower-border, and may also contain herbs and ornamental vegetable subjects. The path will thus run between two borders—that next the fence or wall, and the one just indicated. The purposes of the flower-border are to serve as a screen, a setting, to the somewhat sombre uniformity of the vegetables growing beyond it; and also to provide a sweet-smelling, eye-pleasing antidote to the cruder aspect and perhaps inodorous indispensable adjuncts of the vegetable quarters. There is much to recommend this floral border; and even in the smallest vegetable plot a row or edging of dwarf or semi-dwarf flowers will be greatly appreciated; and for such a purpose the Herb section (pages 121-142) will be found to offer subjects combining both utility and decoration with a delicious fragrance.

When the general laying-out of the kitchen-garden is completed to the gardener's satisfaction, attention is next directed to the preparation and manipulation of the soil; but the wise cultivator will first of all make himself acquainted with the composition, needs, and every characteristic of the earth with which he has to deal, and from which he expects a fair return for labour, expense, and thought. And when he has mastered and thoroughly understands the essential fundamental principles governing horticultural effort, he will have laid the foundation of, and made great progression towards, the ideal garden.[1]

[1] Should fuller information concerning these matters be sought by the reader, I can do no better than recommend a perusal of my previous book, *Spadecraft*, wherein is portrayed in simplest words the detailed fundamentals of garden operations.

Composition of the Soil

The most important factor to consider when studying the formation of the ideal kitchen-garden is the composition of the soil. The *perfect* soil is undoubtedly a natural one—a virgin soil, the result of centuries of accumulated deposits of decaying vegetable and animal matter, sweetened and refined by atmospheric, climatic, and underground influences. The nearest artificial approach to this virgin soil is that of a garden which has for many years been subjected to a wise routine of scientific cultivation, aided, probably, by a natural adaptivity, composition and situation. But there is many a garden wherein these favourable conditions do not exist, even to a partial extent; and it is in connection with these gardens that the study of the composition and manipulations of soils becomes most imperatively necessary, in order to correct their inherent bad or indifferent qualities. The ideal soil may be an impossibility in such cases, but, nevertheless, earnest aspirations towards it should be indulged in by every gardener.

Soils are composed of minute particles or grains lying more or less closely together, the interstices between the particles being filled with either air or moisture, for "Nature abhors a vacuum." It is from the extent to which air or water predominates that soils derive their fertility and texture—neither water nor air in excess being desirable; and it is also when the two opposing elements are present in equal balance in the soil-spaces that they coalesce and form a moist air or vapour, in which the many chemical constituents of the soil are dissolved. The roots of plants are furnished with an infinitesimal terminal suction-mouth, that is capable of absorbing food in large quantities; and it will be understood from this fact that no solids, or even crude liquids, can be taken up by the roots—that all nutriment absorbed must first be transformed into a moist air or vapour—a process accomplished by the correct relationship of air to water in the soil interstices. It will be also readily seen how greatly the state of the soil affects the food supply of plants growing therein; and indications of its correct manipulation to bring about a congenial medium suited to plant life are provided by an intelligent consideration of the foregoing facts. The procedure to be adopted depends upon the kind of soil one possesses. In cases far removed from the ideal, drastic means, attended by hard work, will be necessary to bring the earth into a sufficiently workable consistency; while better staples, if needing but little alteration, will certainly demand,

at least, *preservation*—a fact often forgotten is that *soils deteriorate!*

The principal means of bringing about the happiest state of affairs in our gardens are draining, digging, manuring, cultivating.

Drainage

The first operation that is necessary to ensure a fertile soil is draining the land—facilitating the quick passage of surplus water naturally present in the earth, as well as rain-water and artificial liquid applications, to the lower depths, at the same time conserving a sufficiency for the needs of plant life near the surface. It is a mistake to suppose that draining the land means the abstraction of every ounce of liquid from the soil; on the contrary, the operation, properly performed, causes wet land to become dry, and vice versa, all other conditions being normal. This is a paradox, but of most easy solution. The withdrawal of excessive moisture from the land by any drainage system causes the soil to become at once amenable to the influence of air and light, the particles become drier and more widely separated, making the soil loose in texture; but the air which rushes into the interstices absorbs the small proportion of moisture that remains therein, and thus is created the vaporous atmosphere so necessary to plant life. In this way, the withdrawal of liquid in an objectionable deleterious form leads to the substitution of moisture in a form which is most acceptable to and assimilable by the plants. Another effect of drainage is to raise the temperature of the soil by the same process of changing a cold, water-logged mass into an aerated, porous soil, and facilitating the entrance of the sun-warmed atmosphere.

Methods of Drainage

Whilst noting the grand results of a proper system of drainage, the question occurs as to the methods and means of accomplishing the work. These must obviously be regulated by circumstances—i.e. the length of one's purse, the nature of the soil to be drained, the extent of the ground, the materials and labour that may be available in the district, and other considerations. The orthodox drainage system is carried out by means of a train of pipes, laid a few feet below the surface along the whole length or width of the plot—in whichever direction the ground may incline. Where no incline exists, the pipes are laid nearer the surface on one side of the garden, with a downward tendency towards the opposite end, where provision for receiving or passing on the liquid accumulations must be made.

But where expense is a consideration, other effective systems can be introduced in a way of a loose layer of broken bricks, stones, crockery, clinkers, or similar material, placed on the same principle as the pipes under the surface soil. There may be one or more of these drainage lines, as circumstances may dictate ; but if the garden paths are well drained, in many instances there will be little necessity for a drain running under the garden soil. Considering the fact that soil-drains often become choked—especially open drains made with loose rubbish —it is as well to cause each pathway to become a deep, effective drainage system—an underground watercourse, in fact—well guarded from danger of sinking or filling up, and the hard surface of the path made up on top of the drain. A narrow, deep gulley may also be excavated on each side of the pathway next to the garden soil, in which the pipes or broken rubbish may be laid ; then, if the path be formed in arch fashion from side to side, water will run off and soak into these gullies, thus draining the pathway as well as the garden soil. An obstinate piece of waterlogged ground may be effectively drained by excavating the soil at the lowest spot to a considerable depth and placing at the bottom large branches of trees, prunings, or other woody rubbish, the earth being returned on top of the branches ; indeed, a path may be thus efficiently drained by placing such materials in a deep trench dug in the border next the pathway on one or both sides of the latter.

Digging

The object of digging is to loosen the soil so as to render it more fit for the reception of seeds and plants, and the work may be performed by either the spade or fork. The operation is as follows : The digging-tool is thrust into the ground, and driven down as far as it will go by pressure of the foot. The workman begins at one end of the piece of ground, and opens a trench quite across it, at least a foot wide and deep, or more, carrying the earth to the end of the plot where he intends to finish. So far as depth and width are concerned, shallow soils resting on chalk, gravel, sand, etc., should not be dug deeper than half a foot ; clay soils do not often admit of digging to a depth of more than a foot ; whilst upon other soils no limit is placed. The trench is then filled up again by digging out the next foot-wide-and-deep piece of ground. Every spadeful of soil *must be reversed* when replaced ; and the open trench must be preserved, as the digging continues, between the dug and undug ground. As the work proceeds, all large clods should be broken, especially

when the ground is required for almost immediate sowing or planting, and an even surface preserved. Then, having dug to the other end of the piece, the earth taken out of the first trench is used to fill up the last opening.

Where the ground is of a greater depth, the subsoil being of good calibre or capable of improvement, and the cultivation of deep-rooting subjects is in view, the soil should receive a thorough breaking-up in its lower depths as well as the layer nearer the surface. Despite what I have said concerning digging shallow soils, the under strata of which would be useless on the surface, there is every reason for attacking and pulverizing this hard, chalky, rocky, or clayey mass, as the case may be, through which no root can penetrate or derive much benefit. One strong argument in favour of breaking up such subsoils is that drainage is effected thereby; another is a welcome addition to the depth of the earth which in time would be afforded.

Manipulation of the Different Textures

The nature and composition of the ground determines its treatment. Heavy or "strong" soils, which are naturally of a clayey nature, may be greatly benefited by being manured and roughly laid up in ridges early in the autumn; if, however, there is a very great percentage of clay in the soil, an early exposure to frosts may cause the soil to partake of the nature of plaster, and thus be very difficult to work for some time. However, repeated dressings of road scrapings, sand, ashes, burnt soil, decayed garden rubbish (with which lime should be mixed), and similar opening material, well mixed, when opportunity presents itself, with the clay, will gradually convert the plastic mass into a more easily-worked soil. These materials should be collected all the year round, placed upon any piece of ground which becomes vacant, or requires digging, and dug in with a fork. Ground that has been ridged in autumn should be levelled when the soil appears in workable condition; this will be during frosty weather, especially immediately after a severe frost—just before a decided thaw sets in, for the soil will then crumble readily. Besides, when thus levelled, the drying winds and frosts of early spring will bring about by their influence that fine surface which is so necessary for sowing seeds. In some soils and situations, however, the state of the ground is inclined to become very cold and sodden, and difficult to form into ridges; and the procedure in such instance is to fork or prise up the soil in rough

lumps, without any attempt at pulverization, and leave these to the mercy of the weather until a modification in the consistency of the lumps is observable.

Clayey loams are improved by being manured and roughly dug during the autumn and early winter.

Soils of medium texture, and light soils resting on chalky, gravelly, or sandy subsoil, which work freely without a long exposure to pulverizing influences, are best left severely alone during autumn and early winter.

In digging friable soils—especially with a fork—there is little necessity to break whatever lumps may be formed, providing these do not interfere with the preservation of an even surface.

Moist soils are in the best condition for digging just after gentle rains, but the digging should never be attempted when the ground is soaked with heavy rain. Neither should any soil, light or heavy, be touched in the way of digging whilst snow lies upon it ; nor should ice or frost be buried ; for thawing under the surface of such buried snow or ice is so slow that it causes the land to retain a cold, wet state until it is almost too late for use in spring.

A dressing of clayey marl or clay is very valuable to extremely light soils ; the lumps of such materials being scattered promiscuously over the ground. The frosts will break these up, and the residue may be thoroughly mixed with the soil in the spring.

Humus

One of the main sustaining features of a vegetable-garden is a substance called " humus." Without this substance vegetable culture becomes impossible ; yet there are many gardeners who never trouble to ascertain whether this essential material is present in their soils to an appreciable extent. Certainly humus is present, more or less, in nearly every kind of soil, but the proportion in which it exists determines the extent of fertility, which shows at once its great importance.

Humus is formed in the soil by the decay of vegetable matter. A typical example of humus is well-decomposed leaf-mould. The sources from whence the soil usually obtains its store of humus are the farmyard manure we apply, and the roots and tops of all vegetation growing in it. Humus, being formed from decaying vegetable matter, naturally contains a large proportion of the chemical food that was taken up by the plants when they were growing. Many acids are also formed which attack

and corrode the soil particles. Plant food is thus liberated, and becomes available for successive crops. Humus has the power of retaining plant food which has been applied to the soil in the form of manure, together with a large amount of water, thus providing soluble chemical compounds that are readily absorbed by growing plants, and affording liquid sustenance during drought.

Despite the annual provision of humus in a natural way by decay of vegetable substances, the severe drain upon the resources of the soil of a well-cropped vegetable garden is so great that supplementary provision of humus must be given by the gardener, to keep up a balance of nutriment in his soil. This is an easy task, for Nature, ever ready to assist, produces the materials for the purpose in abundance; but they must be collected and conserved by the cultivator if he wishes to use them. There is much in the way of vegetable refuse, for example, which can be turned into this valuable humus; there is also refuse from the house that can be pressed into the same service; and these materials, together with burnt rubbish, soot, lime, etc., may be systematically collected, and buried deeply in the ground wherever a vacant space may present an opportunity. This may be done all the year through, until quite a large portion of the garden soil is honeycombed by these holes containing the refuse. Of course, decomposition sets in; but being underground, no offence is occasioned, and the lime and soot hastens the process and sweetens the mass at the same time. When the ground has to be dug or trenched, these buried refuse-collections are brought to light, and, being in a more or less advanced state of decay, the stuff incorporates with the soil after the manner of manure, where it completes disintegration. A year or two of this process will bring the poorest of soils into a hearty state of fertility, and together with applied organic and chemical manures, prove the mainstay of the soil all through the burden of the carriage of heavy crops.

Manure versus Humus

In speaking of the calibre or quality of garden soils, the presence of humus therein supplies the meaning of the word "rich," for the richness of soils always depends upon the quantity of humus they contain. No soil can have too much of this valuable fertilizing material. The cultivator, however, must note the difference between manure and humus. The former, in a fresh, crude state, firstly raises the temperature of the ground wherein

it is placed ; secondly, it has a mechanical effect upon the soil a heavy medium is disintegrated and lightened, a light soil is rendered more compact and moisture-retaining, by its application. But so far as vegetation is concerned, crude manure is absolutely poisonous ; its powerful chemical gases, burning acids, and reactionary activities are fatal to the roots of plants wherever contact occurs, so that manure, in its fresh, undecayed state, is useful only in a mechanical way, or for providing heat. Yet, this same manure, after a while, becomes toned down into a mellow, black, soft, friable soil, extremely rich in food compounds and sustaining elements, receiving, filtering, retaining, and giving moisture by means of its well-balanced and organized moist-air cells and perfect composition ; in fact, the manure has been transformed into humus.

Where lasting benefit is desired, therefore, from manurial applications, every facility should be given for the thorough decay of all crude substances committed to the soil. The mechanical action of such matters as lime, soot, ashes, burnt refuse, slops, soap-suds, salt, all helping to bring this desirable state of affairs to satisfactory completion.

Rotation of Crops

The term " rotation of crops " is an incomplete one, it fails to describe or indicate its meaning. The rotation of crops—a system whereby no land shall be made to bear the same or a similar crop two consecutive seasons—does not meet the actual needs of the soil. There is many a piece of land which has borne a crop of the same kind of vegetables for many years without a break. I personally know of a plot upon which Potatoes are planted every year—with good results, too ; and of another that has carried Runner Beans for several years—planted in almost precisely the same spot every time—also with fine results. These instances show that mere rotation of crops does not bring about perfection of produce. The secret of the success that rewards these old-fashioned gardeners of unscientific habit is the fact that each year a sufficiency of the right quality manure is put into the soil, thus giving back what has been extracted by the crop, that the succeeding crops shall not suffer.

Now, if we look at the rotation of crops from the manurial standpoint, we have in a moment found the true meaning of the term. A system of manuring and a system of cropping should always be applied in company ; neither must be applied alone. I fail to see the use of arranging for Potatoes to follow

Carrots, for instance, if the ground does not contain the right sort of nutriment to successfully produce and sustain the Potatoes; or attempting to grow Cauliflowers after the essential nutriment has been abstracted by Parnsips or Peas. It is plain, then, that the gardener must, in arranging for the succession of certain crops, also ascertain by observation and calculation whether the ground is in fit condition to maintain such succession or not. It is often advised, in a casual manner, to allow surface-rooting crops to follow deep-rooting ones, and vice versa; but there is this to remember—the presence of the deep-rooting vegetables prohibited the incorporation of manure in the surface soil during the year of their occupancy, therefore this portion of the ground must be in an almost starved condition by the time the shallow-rooting plants are to take their turn; which makes it quite evident that the latter are in for a very bad time should it not occur to the cultivator to renovate that surface soil with a manurial application suited to the crop that is to succeed the long roots. This is very obvious, one may point out, and is easily left to the intelligence and initiative of the gardener. Quite correct; but the most intelligent man makes ridiculous mistakes sometimes; memory will fail; distractions will occur; and forgetfulness, lack of forethought and too little time to spare in these rushing days are common to us all. It is therefore best to face the fact that, where the cropping of ground with vegetables is concerned, the formula, "rotation of crops" must be amended, in order to read "Rotation of crops *with* manurial adjustment."

Manurial Adjustment

It is certainly true that manurial adjustment often accompanies rotation of crops as a natural result; but is it not accidental rather than designed in a great many cases, owing to the geniality or adaptability of the soil; and is not the crop selected for succession also often a happy accident in following a theoretical course of operation rather than a well-thought-out choice? It is also true that rotation of crops assists manurial adjustment—in theory, but not always or necessarily in practice; it depends on local conditions, as a rule. And it must be admitted that the balance of nutriment can always be corrected by a scientific application of artificial chemical manures during the growing season. Still, after these facts are conceded, there yet remains the glaring need of bringing the soil up to the mark by the judicious application of organic manures to replace the nutriment which has been extracted or not been given previously.

As an illustration of this, let me say a few words anent a system of cropping a piece of land in any garden. We will presume the first crop to be carried is a tap-root one—say, Parsnips. The land is, of course, dug very deeply, and manured deep down in the *subsoil only*, the presence of fresh manure being undesirable in the top spit for this crop. When the Parsnips have been removed from the plot, the soil of the latter may be considered an excellent medium for the production of Greenstuffs of some kind; but there is one defect—an exhausted top-soil. (There can be no question about this, considering that no manure has been applied to it for nearly two years, and all the original nutriment must have been used up by the Parsnips.) The plot, then, must be dug over, and well manured during the operation, before planting the Cabbages, etc. If there is time before the winter months approach, a very light catch-crop may be secured, if desired, when the Greenstuffs have matured; but the winter should be devoted to deep-digging, or trenching, with manuring, as deeply as possible, distributing the manure throughout from top to bottom. The plot, in the spring, will be an ideal site for an Onion bed, capable of high-class results, especially if a fair supply of soot, ashes, lime, etc., is given during soil manipulation; and the same may be prophesied for such crops as Peas, Beans, or other strong-feeding vegetables. Following upon this strenuous cropping, if the plot be allowed a rest all the succeeding winter and early spring, there surely could be no more ideal soil than this for producing an excellent crop of Potatoes or Beet—and *without* further manuring. A process of this or similar kind could be repeated indefinitely, with variations and modifications, as desire or necessity dictated, with the certainty of the ground maintaining an equable state of fertility and tilth.

Manures

Manures directly assist vegetable growth by recharging the soil with those nutritive chemical properties which have been extracted by previous crops, thus preventing exhaustion and sterility: and also provide heating materials which considerably raise the temperature of the soil wherein they are placed. Organic manures are the natural products of vegetable decay and animal refuse; artificial manures are manufactured chemical products. The first class contain the decaying materials in bulk, and are useful in adding to and enriching the soil as well as affording food direct to plants; the second class are composed of concentrated chemicals in a more or less powdered or crystallized state, to be used in

very small quantities near the surface of the soil. New and fresh organic manure ferments, and has the effect of lightening the soil; whilst well-decayed manures render it more compact. The manure of birds is richer and stronger than that of animals, and should be used cautiously and sparingly, or well mixed with soil. Guano and poultry manure are examples. The manure of horses, pigs, etc., is hot, and suited to cold, heavy soils; whilst that of the cow and sheep is useful upon light, sandy soils. Fresh manure, of whatever kind, is preferably mixed with the lower strata of the garden ground, where it will decay and lose its burning, acid properties, and afterwards prove most beneficial when brought to the surface. Old, "spent" manure makes an excellent top-dressing for all purposes. Fish manures are most excellent, providing the valuable phosphate of lime needed by so many vegetable crops; whilst bones and blood are very rich in fertilizing properties; bone-meal is most permanent in its effect upon the soil.

Organic Manures

I would advise beginners to use artificial manures in small quantities and often. I remember giving an extra quantity of nitrate of soda to some very backward plants. A few days afterwards, however, the leaves turned a sickly hue, and it was with great difficulty that I was able to save the plants from dying. I have found that it is best to discover which two manures suit any one particular crop, and then use each alternately. It is a better way than treating the plants with any one particular manure time after time.

Artificial Manures

As I have indicated the special manures required by all the classes of vegetables treated in this book, whilst discussing cultural and managerial procedure, there is no necessity to enlarge upon the subject just here; but I would like to emphasize the great value of lime in the vegetable-garden—its sweetening, fertilizing, pulverizing properties are wonderful, to which must be added its deadly effect upon insects, weeds, fungi, all forms of decay or rot, disease, and sourness. Lime in quantity should be placed upon the ground some time previous to cropping, and dug in thoroughly; its effect may be hardly noticeable the first year, but there can be no mistake about its beneficial presence subsequently. Potatoes are the only vegetables which are injured by the presence of lime. Gas-lime must be applied to ground infested with insects or disease

Mechanical Manurial Agents

germs, and no crop must be grown thereon for at least three months afterwards. Lime, in very small quantities, may be effectively used as a preventive of insect attacks. Salt is another fertilizer for the kitchen-garden, and one not generally recognized; in fact, many of our vegetables are native to the seashore, and even demand the application of this commodity, which is often denied them. Common salt, sea-sand, and seaweed may all be used for the purpose of keeping up the balance of saline elements in the soil, not forgetting also its drastic action upon anything in the way of unwanted vegetation, weeds, insects, and decay. Soot and vegetable-ash form other valuable manurial and insect-combating agents; and no garden should be without a liberal supply.

The Selection of Seeds

One point connected with the selection of suitable seeds that is provocative of much heartburning and disappointment with cultivators may be noted. There is, I admit, much seductive attractiveness in the offer of new, improved, or giant strains of certain vegetables, and an almost irresistible impulse and desire on the part of the gardener to try "just one row" in order to experience the delights of producing something large and novel or super-productive; and there are few who can resist the temptation thus presented. Well, that is perhaps as it should be—at least, so the seedsman thinks; but the latter individual often has to alter his jubilant note into something of a sad strain upon receipt of complaints that his new seeds did not come up to the advertised mark in the way of expectations! But the seedsman is often unfairly blamed. Let it be noted, and treated as a maxim, that improved strains created by intense cultivation and rigorous selection demand *a continuity* of such cultivation and selection to maintain the standard of excellence which the strain has acquired. In other words, when the gardener buys seeds of an avowed improved vegetable, he also purchases the responsibility of maintenance of quality—by personal attention to culture and treatment of his purchases; the improvement is passed by the seller to the buyer on the understanding that the latter affords the necessary essentials to enable the improvement to be perpetuated. Otherwise, under bad cultivation and indifferent care, the good work is lost, and the vegetable reverts to its former low standard. Thus it must be clearly understood that high-class vegetables, raised to the highest pitch of excellence, size, and productiveness by diligent cultivation, require a generous treatment from the

gardener into whose hands they pass. The individual who cannot give such exacting treatment had better by far abstain from plunging into a business which he cannot accommodate, and be content with the old, useful varieties instead.

Old versus New

In speaking of the old-fashioned sorts, I would like to commend them. Have not many of our oldest vegetable selections kept their place in the forefront of utility, despite the greater attractiveness and superiority of the newcomers? And cannot these same vegetables be made to yield wondrously well by fair and generous cultivation? But I am afraid many gardeners forget the status of the older sorts, and look upon the improved vegetables as merely labour-saving creations whereby they can work less and obtain more; but it is not so. It is the duty of every gardener to maintain the standard, and, if he can, raise it still higher.

Size versus Quality

Size is not always a desirable quality in vegetables, and the amateur especially should be careful in this matter, because the finely-proportioned vegetable is so very attractive and so alluring that the temptation to produce it is almost irresistible. And nothing can be more disappointing and disgusting than the discovery that a huge, white, perfectly-shaped Turnip is nothing more or less than a fraud when its interior is exposed to light, or the fine-looking super-Carrot which on cooking betrays the fact that it consists of wood rather than flesh! Yet I have nothing to say against the advance in proportions many vegetables have attained, when the outward gain is balanced by an equal amount of inner richness. Such a vegetable, it must be remembered, is not brought into existence by a process of stimulating culture or forced growth; rather, it is the result of years of patient selection and re-selection, often bringing disappointment and chagrin to the experimenter, but paying him well in the end. There is a vast difference between the two processes; and *time* is always the factor which evolves the larger vegetable with unimpaired stamina and finer qualities.

Seed-Sowing

The committal of seeds to the ground is an operation which does not always receive sufficiently serious consideration. Upon seed-sowing, to a very large extent, depends the success or failure of the crop. Seeds are often spoilt by being sown at the wrong time—during very wet or very dry weather; sown upon unsuitable surface, composed of soil of a sticky nature, liable to cake, dry or sandy, lumpy, insufficiently drained; sown too deeply or not deep

enough; sown too thickly—under all of these conditions seeds will not germinate, and seedlings will not prosper. The ideal sowing conditions include, first, a suitable surface soil—fine, rich, friable, warm, moist, recently dug; second, propitious weather—just after a gentle shower or watering, and during a spell of atmospheric warmth, without great sun-heat; third, good, fresh seeds.

The Depth to Sow

To secure the first-named, good digging and draining, with the use of hoe and rake, is necessary; while over the second the gardener has but little control beyond taking advantage of any favourable development in the state of the weather to make his sowings; and the third is a matter of judicious selection. The points to be thoroughly understood by the sower are that, in order to germinate, seeds require moisture, air, genial warmth, and darkness. The ground atmosphere being in a condition to provide the first three, the seeds are placed just deep enough in the soil to ensure the fourth condition. This depth is determined by the size of the seed; that of a Bean, for instance, may be planted two to three inches deep, whilst the seeds of the herb Rampion—the smallest of kitchen-garden seeds—must be simply scattered upon the surface and gently pressed into the soil. Another factor that determines the depth to sow is the nature of the ground and the state of the prevailing weather. If the ground is on the heavy or wet side, the seeds are more lightly covered than those which are sown upon a light, dry soil; the advantage being, in the first case, the access of air to the seed, and, in the second, ensuring a sufficiency of moisture. Seeds may also be planted much nearer the surface in intermittent damp weather, when there is a prospect of the ground remaining fairly moist until the seedling plants have obtained a secure hold upon the soil. In drier weather conditions, however, the seeds must be placed deeper in the soil, or the young plants will die for lack of sustenance later on. "Depth," it must be remembered, is to be reckoned in very small *fractions of inches*.

A Seed-Bed Compost

It is an advantage, on the majority of soils, if the drills are made about twice as deep as necessary, and partly filled with a compost containing materials which offer a better medium than the surrounding soil, which, if at all stiff or clayey, is certain to be somewhat lumpy, however well pulverized, and in which the seeds may get out of their depth or become covered by clods, stones, etc. The materials for this sowing-compost may

be divided into three distinct sections, and include : (1) Very fine and rich garden soil, crumbly loam, leaf-mould, peat, old hotbed manure, etc.—these may form the basis of the compost, and they must be reduced to a powdered state. (2) Sand, sea-sand, road-dust, wood ashes, flue-dust, soot, salt, etc. (3) Super-phosphate, Clay's Fertilizer, bone-meal, guano. This list indicates the kind of ingredients that are suited to the purpose ; any or all of them may be used—whatever the locality produces and circumstances provide. They must be well mixed—Nos. 1 and 2 in any proportion ; and at intervals during the mixing a slight dusting of No. 3 should be sprinkled over the mass. Any one favourite and suitable chemical manure may be used ; but the bone-meal should not be omitted, for its effects are very beneficial.

When the mixing has thoroughly and completely taken place, the finished product will prove a valuable asset in the hands of the sower. A drill partly filled with this compost provides a mechanical support wherein the seeds may lodge without any fear of being spoilt ; for the compost, lying lightly and loosely upon the seeds, can, by slight pressure only, be made quite compact, yet admitting light and air, and conserving a sufficiency of moisture to ensure germination. Moreover, the resultant seedlings will have the inestimable advantage of a fine, rich soil, replete with food elements, into which the young rootlets will enter and find a congenial home. These circumstances will have a marked effect upon the future well-being of the plants, because good initial growth must certainly result in greater stamina and size. Therefore it will be seen how valuable good seed- and seedling-beds are, and the enormous aid a compost such as I have described would afford in this direction.

Broadcast sowing—i.e., scattering the seeds here, there, and everywhere—is not to be recommended except for the purpose of snatching a quick crop from a newly-planted or sown Potato, Carrot, or Onion bed by scattering a handful of seeds of Turnip Radishes or Lettuces thereon. Drills are by far the best, not only on the score of neatness, but because the gardener has complete control over the rows of seedlings, and can with greatest ease perform the operations of weeding and thinning. The drills should always be drawn as straight as possible, and in very dry weather or situations, water should be poured along the drills some time previous to sowing the seeds.

I fail to see the use of estimating the exact quantity of seeds

necessary for a given space. In these days of penny and two penny packets, stating the number of seeds therein, it is very easy to judge the quantity required; and it all depends upon the sower whether a large or small amount is purchased. In fact, much seed is wasted by sowing far too thickly. Sow the seeds in sufficient numbers to compensate for losses, and no more.

Seedling Plants

The treatment of seedling plants from the time they peep through the soil until they are able to take care of themselves as adults demands great care upon the part of the cultivator, for a plant may be made or marred quite easily in the initial stages of its existence. Strong, continuous, steady growth must be maintained throughout the first few weeks of the career of any seedling; and vegetables are to the forefront in this respect. Weakly, drawn, straggling growth is useless. Such conditions are usually the outcome of a crowded seed-bed or seed-drill; and emphasizes the necessity for early and judicious thinning out of all plants that cause a cramped situation, however fine-looking they may be. There is a great timidity on the part of many cultivators in dealing with the young plants—the fear of mistaking weeds for good plants, the possibility of selecting for removal those that are really the best specimens, and a general reluctance to interfere with what appears to be luxuriant growth. But there must be no hesitation or reluctance where crowded seedlings are concerned. Severe thinning need not take place at the outset; the gardener who is at all doubtful of his ability to make a wise selection whilst the plants are very young should first of all remove a few of the very crowded seedlings, leaving the others a few days longer to show their true colours. Then another thinning may be made, pulling out all plants that do not appear to be growing so strongly as their companions, as well as those that show any fault or have become damaged. After this, there will be ample room for the remainder to develop, and they may be allowed to attain to a good size before the final selection and rejection is made. The last thinning, of course, should leave the plants disposed at a distance from each other to ensure ample space when they have become full grown.

All during these operations the use of the hoe and the drastic removal of weeds is imperative. The latter operation, as well as that of thinning out, is facilitated by being carried out after a gentle shower of rain, or the application of water from the

watering-pot; the hoe following immediately between the rows, which preserves a fine, open surface, and allows the entrance of light, air, and moisture into the soil. Particular care should be taken to make the young plants quite firm in the ground after disturbance by weeding, thinning, or cultivation.

Water is another provision that must have attention when the soil becomes at all dry. Before the water-pot is used, however, and during showery weather, an occasional dusting of artificial manure may be applied to the ground between the rows, and gently hoed, raked, or forked in. This is unnecessary where steady growth is being maintained.

Disease belongs more to the adult than to the younger plants, as a rule, although, of course, the latter are liable to be attacked; insects are the enemies that seedlings suffer from most, as the tender leaves and shoots of the immature plants are very attractive to them. Such attacks must be guarded against and prevented, at all costs; for once the little plants are robbed of their foliage, their chances of proving useful in the future are almost *nil*. Soot may be liberally sprinkled upon the foliage as a preventive; whilst salt, lime, soot, and flue-ashes may be also used effectively *upon the ground*.

Enemies of Seedlings

The use of the hoe and hand-fork should keep pace with the growth of the plants. Neglect of cultivation is often the ruin of what would otherwise be a fine crop; in fact, cultivation of the soil is really more important than manuring the soil, in many cases, especially on heavy clays.

Transplanting and planting out are two operations often imperfectly done. The first applies chiefly to the removal of plants from the seed-bed to the nursery or permanent quarters, and requires care and skill. If a thin-pronged fork be inserted at the edge of the seed-bed or drill, and the soil gently raised, the plants therein may be removed with a small ball of earth attached to the roots, especially if the bed is moist at the time. Holes in the new quarters may be made with a dibble or trowel, and filled with water a few minutes before the planting takes place. Then each plant should be inserted carefully, holding it with one hand whilst filling the earth in with the other; finishing by gentle pressure all around the collar of the plant with the fingers or point of the trowel or dibble. Transplanting—or "pricking out"—from boxes and

Transplanting and Planting Out

pots is performed in similar manner. Planting-out refers usually to larger specimens that have passed some time in a nursery bed to gain a sufficiency of strength. The operation coincides with that of transplanting seedlings, but the procedure may be somewhat rougher. Cabbage, Onion, and Lettuce plants, for example, are usually placed in a dibbled hole, which is then filled with water, and soon afterwards the earth is made firm around the stem of the plant by pressing with the point of the dibble.

General Cultivation

The art of cultivation consists in: (1) continually stirring the soil, either vigorously or gently, as circumstances warrant, by means of the rake, hoe, fork, and cultivator; (2) a sufficient provision of liquid supplies; (3) the application of stimulating manures during growth, chiefly chemical and in liquid form, or assisted to act by watering or rainfall; (4) weed-killing—by no means the least of all operations; and (5) the removal and destruction of insects, or prevention of their attacks. Good cultivation assists growth, fruitfulness, size, and quality. It often succeeds in producing good crops on poor soil, and where a proper system of cultivation and drainage exists, quite half the usual quantity of manure afforded under indifferent methods may be dispensed with. The golden rule for the vegetable gardener is to never let the soil rest.

Insect Pests and Diseases

So much time, worry, and labour is spent upon the attempted elimination of insect pests, and with but poor success, after all, that the gardener is often in despair and feels like giving up the conflict. This proves that prevention by any means is better than cure; that it is far wiser to track the enemy to its place of origin, and destroy it there, or remove causes and environment that may afford the least encouragement to insect and disease production, rather than to wait until the enemy is actually upon the scene and the deadly, fatal attacks begun. And if we carefully examine and inquire into these matters, we shall find that one of the most prolific encouragements to garden enemies is weeds and superfluous vegetation; another is decaying vegetable and other matter left lying upon the *surface* of the soil, wherein breed hosts of undesirables that affect both the health of the garden and the gardener; stagnant water, excessive dampness, planting too closely, too much shade, and, worst of all, lack of care, foresight, and vigilance on the part of the cultivator himself, are other channels through and

by which disease and insect pests are spread. My favourite antidote, which may not appeal to everybody—is a healthy, vigorous pen of poultry—the number of insects such birds dispose of is marvellous; and a brood of ducks, if judiciously allowed to perambulate the garden—under the watchful eye of the gardener—at dusk, will make terrific gaps in the ranks of our enemies. Again, we must not despise the humble efforts of the robin, starling, thrush, and blackbird. Despite the evil reputation that surrounds such birds when the ripe fruit is in evidence in our gardens, whatever damage they may do in that direction is fully compensated by the enormous number of insects these birds dispose of in the autumn, winter, and spring months—just the period during which the destruction of insects is most opportune. If there is a choice, I would rather allow Mr. Blackbird or Mrs. Starling to appropriate my Plums and Cherries than a rascally wasp or wriggling maggot! And I really think that is what it generally amounts to. Let us be lenient with our birds, even if some of them are incorrigible thieves! If we destroy our feathered allies, there is far worse—indeed, something unmanageable—to follow!

Weeds

But I maintain that the worst of all, the most insidious, disseminators of insect and disease troubles are weeds. It is a notable fact that when weeds are allowed to grow in close proximity to vegetables that belong to the same family group of plants, those vegetables often fall a prey to disease and insect pests. The weeds, of course, spring up in advance of the good, useful plants, and are attacked by garden enemies, which are at once attracted to so plentiful a stock of food; moreover, weeds occur in such numbers, so crowded are the plants, that most of them have not sufficient stamina to withstand attacks of disease, and become infested in a wholesale manner. One can test this almost anywhere—weeds, grasses, and other undesirable plants are always a home for greenfly, blackfly, mildew, slugs, caterpillars, snails, etc. When the enemy has worked his will upon the weeds, he is faced with a greater temptation in the shape of the more luscious vegetables close by, which immediately become the object of attack. The cultivator may, by thinning out quickly by cultivation, and by the use of insecticides, ward off or prevent serious developments of the attack; but it is far better to remove the weeds at the beginning. It behoves every gardener, then, to quickly eliminate every seedling weed that appears in his garden, whether on the pathways, vacant or unused ground, the

seed-bed—anywhere, in fact, where weeds make an appearance ; nothing else will better help to save our crops from the attentions of disease and insects.[1]

I would like to emphasize the fact that over-manuring, under-manuring, rank manure, manure- and rubbish-heaps and refuse of any kind lying about the ground are the breeding-grounds of insect and disease troubles. Unless manure and vegetable rubbish can be put deep down in the ground immediately it is received or formed, and all woody matter burnt, it should either be utilized in some other fashion or cleared away. Lime and soot used freely will mitigate much of the danger, and manure and vegetable refuse that is unwanted for immediate use should be covered with a layer of earth and used for growing Cucumbers, Gourds, Marrows, and salading plants. In treating manures to obviate nuisance or insect breeding, there is probably much danger of spoiling the best qualities of the manure ; but circumstances have to be considered, and the risk must be run.

Fatal Exposure of Refuse

Having now concluded my remarks in general concerning the possibilities of the kitchen-garden, I will proceed to discuss the merits of each vegetable subject, with specific details as to uses, culture, management, and value attached thereto. The vegetables are placed in a special grouping ; and the subjects in each group will be found to call for cultural treatment upon approximate lines.

[1] A chapter will be found in *Spadecraft* upon "Weeds," replete with interesting and informative facts concerning weeds and means of elimination.

SECTION I

VEGETABLES FOR EXHIBITION

ALL vegetables required for show purposes must be accorded special individual treatment, from the seed to the matured plant—a careful, painstaking, watchful system of culture, entirely different from the general procedure. The results depend almost entirely upon the skill and perseverance of the would-be exhibitor, and the attention he lavishes upon his plants. It also depends upon the rules and requirements of the show authorities as to how the growth of the produce is to be guided and controlled in order to bring forth the style of vegetable in demand. As a general rule, a selection is made from seeds offered by firms of repute, and these are sown upon a choice bed of rich soil, a few being dropped at intervals of several inches. In the case of long-rooted vegetables, a hole is made with a long dibble—the deeper and wider the better; this is filled with very rich, friable soil, upon which a few seeds are sown. In every case, a careful examination of the seedlings are made as soon as they are large enough for their character and quality to be clearly observable; one plant—the strongest and healthiest—is chosen, all the others being pulled out. The remaining plant will hereafter be regarded as a precious thing—something to be jealously guarded, zealously cultivated, and judiciously fed, until the day approaches for its qualities to be put to the test. There is also much art in sowing and planting in order to have the exhibits ready by a certain date.

PREPARING THE VEGETABLES FOR THE SHOW.—I give a few hints as to the preparation of the exhibits which may prove useful to the amateur. Tap-roots, such as Beetroots, Carrots, and Parsnips, are usually lifted several days before the show, and, after a thorough washing, may be either stored in dry sand or finely-sifted ashes, or wrapped in clean white paper.

Potatoes should be selected immediately they are removed from the ground, placing the chosen tubers in a dark cupboard; defer washing them, however, until the day previous to the show. If Beans or Peas are likely to be too old on the eventful day, or should trouble be feared from rats, mice, or birds, the pods, with as much stem as possible, should be cut, and, after tying them in small bundles, stored in a dark, cool place, allowing the tips of the stems to rest in rain-water. Take especial care of Cauliflowers and Broccoli, and, if fully grown, pull the plants up, and hang, head downwards, in a cool spot; if this is done even a week before the show, it will be far better than running the risk of the specimens being too matured, discoloured by sun, or disfigured by the many insects which abound. Celery, Leeks, and Onions are best left in the ground until the last moment. When selecting Vegetable Marrows or Cucumbers, handle them with care, always endeavouring to retain the faded flower on each specimen. Lastly, make a point of having in reserve several spare samples of each vegetable it is intended to place before the judges, for, not infrequently, through accident or carelessness, specimens get damaged, and, if the exhibition is too far from your garden to allow these being replaced, you will experience the mortification of realizing that your strenuous efforts all through the growing season have been an utter waste of time—a calamity even worse than having your exhibits contemptuously ignored by the judges!

Hints for Vegetable Exhibitors.—Do not make entries that you have no reasonable prospect of filling. Aim at quality, together with uniformity, rather than extra large size. Medium-sized specimens of Turnips, Potatoes, Marrows, Beetroot, and Cauliflowers invariably find most favour with the judges. Tomatoes, Celery, Peas, Beans, and Cucumbers can hardly be too large. The exhibits should be arranged upon plain white plates or dishes; if coloured plates are used, it will be wise to cover them with green leaves. Always show vegetables in a scrupulously clean condition; if given a short immersion in rain-water, even the dirtiest specimens may be effectually cleaned without injury by the aid of a soft sponge or rag. Take special care in "setting up" vegetable collections. Boards are better than baskets for this purpose, and should be of a size large enough to allow every vegetable to have ample room. A few sprays of Parsley considerably improve and add greatly to the appearance of any exhibit; if Parsley is unobtainable, greenery of any sort may be substituted—Carrot-tops,

for instance. The boards may also be covered with large sheets of white paper, each specimen being placed upon small heaps of fine wood or paper shavings. Do not forget to place a ticket bearing the name on each exhibit; otherwise, loss of points, or disqualification, is incurred. Celery, Runner, and Kidney Beans, Broccoli, and Cauliflower, Onions, Peas, Cabbage, and Seakale usually gain highest points at a show for vegetables.

SECTION II

LONG-ROOTED VEGETABLES

NO one can look at the long, tapering root of a Parsnip or Carrot without realizing the *great depth of loose soil* such a root demands for its sustenance and perfect development, the freedom which must be given to its downward course, and the indifferent results which would perforce accrue were that course hindered or thwarted by obstruction in the shape of hard, almost impenetrable soil! And it is upon this realization that all operations governing the production of tap-rooted subjects must pivot and be firmly and irrevocably based. There is, indeed, little to be gained from the attempt to grow tap-roots upon an ungrateful, hard-working, compact-lying soil, or upon ground that is begrudged the necessary spade-work. The possessor of shallow or hard soils, therefore, should confine his ambitions to the cultivation of round, or turnip-rooted varieties, in which nearly all vegetables have representatives or substitutes. I have mentioned spade-work: this and tap-rooted vegetables are indissoluble partners—where the former is lacking, the attempted production of the latter is sheer waste of time. Of course, the class of vegetables under consideration can be, and are often, grown upon poor, neglected soils, and by indifferent, careless gardeners; but I fear the resulting specimens do not accord with *my* definition and conception of a desirable vegetable, or come within the category of culinary digestibles which should form part of our daily menu! A good-sized, tender, easily-cooked root is my objective; and nothing tends to produce this desirable article of food as—first, deep digging, of any and every effective character; second, subsoil manuring, to accompany the digging; and third, but not least, top-spit and surface cultivation with a sufficiency of moisture. As the aid of frost and wind is very desirable in the desiccation

of heavy subsoils—*the* essential of tap-root culture—the ground should be thrown up in lumpy ridges during late autumn, thoroughly breaking up the subsoil thus exposed before levelling again. Nothing but good can result from labour expended in this direction; pulverization can never be too thorough. Therefore, occasional ridging or trenching, as far as circumstances will permit, may be done all through autumn, winter, or spring months. If there be a question of giving any part of the ground to be devoted to long-rooted vegetables the maximum of attention in the way of digging and manuring, let it be the subsoil. Soot and superphosphate are excellent artificial manures for the drills at sowing-time, and weak applications of nitrate of soda every few weeks after the plants are up.

PARSNIPS (*Panistaca sativa*).—The Parsnip is a vegetable requiring long, uninterrupted growth, added to which is the slowness in the germinating power of its seeds. These two characteristics impose upon the gardener the necessity for early sowing; and as seed committed to the ground early in the year—February and the beginning of March—is none too safe, it is best to sow fairly thickly and on good friable soil. The last-mentioned condition presents some difficulty during the adverse weather which will probably be the rule, or the wet state of the soil, but the "seed-bed compost" advocated will be found most useful in the realization of a good seed-bed in unfavourable situations.

The ground should be watched for the first sign of germination, because if the appearance of the seedlings eventually prove "patchy," fresh seed can be sown, thus ensuring evenness in the rows of plants. The seeds, however, may not all germinate at once, especially in dry weather, and a short time should be given to allow this to take place before conclusions of total loss are formed. Early thinning and the drastic elimination of every suspicion of a weed is imperative.

Beyond cultivating the soil with the hoe, and keeping the soil free around the crowns of the plants, there is no special requirement to be met concerning the development of the Parsnip until its maturity; and when this last stage has become patent, the roots may be dug for immediate use, and to be stored; or they are left in the ground—as frost improves rather than harms the roots—to be removed as required for consumption; the only objection to the latter method is the loss of winter preparation the ground occupied by the roots might

otherwise have received, and this is reduced to a minimum when the treatment given the previous winter is considered. I would, moreover, like to suggest the use of a small fork between the rows where the ground tends to consolidate; the soil cannot be kept too free.

Variations among Parsnips are not at all numerous; indeed, there are but three or four distinct kinds, those offered as specialities by seedsmen being simply improvements on existing types. The *Hollow Crowned* Parsnip is the one most generally in cultivation. The *Student* is another fine sort, of medium length, and most suitable for exhibition purposes. There is also a dwarf variety suited to shallow soils.

CARROTS (*Daucus carota*).—Unlike the Parsnip, the Carrot can justly lay claim to a number of distinct varieties, suited to various uses and seasons. It is, on the whole, a deep-rooting subject; and although the stump-rooted varieties will flourish on soil of medium depth, there is every prospect of securing better produce on well-trenched ground. Here is another case, moreover, in which no fresh, rank, or strong manure, organic or artificial, should be put in any effective quantity into the upper layer of soil, but rather it must be well mixed, deep down, with the subsoil. Its presence in the top-soil will inevitably lead to the production of badly-shaped, stringy roots, with large core and very little flesh—just the opposite to that so greatly desired in a Carrot destined for kitchen operations. This reminder will suffice to suggest the best procedure as to the treatment of the ground.

The Carrot succeeds best in an open site, free from heavy shade, with a well-worked subsoil, and the surface kept in a loose, porous condition by frequent cultivation. Carrots should never be allowed to exist in what is little more than a hole in hard, unyielding ground, sometimes very dry, sometimes sodden.

Seed-sowing is most profitably performed when the ground is in a friable, moist condition; if the soil is excessively wet or dry, failure to germinate will be the lot of the majority of the seeds. Early sowings are made somewhat thickly, in order to compensate for a percentage of losses, but thin sowing should be the general rule.

The different classes of Carrot accommodate themselves splendidly to the special requirements of the culinary art at different times of the year; and their cultivation may be undertaken with this end kept well in view. Three divisions may be

recognized for this purpose: the quickly-maturing short or "stump"-rooted varieties; the intermediate sorts; and the large, long, main-crop Carrots, that require prolonged growth and thorough maturing for storage purposes.

The first class may come well into the category of "catch-crops." These vegetables are most valuable on account of their very tender and sweet qualities—if well and quickly grown, of course. They are adapted for growth in any garden, large or small, and at almost any time of the year, with the aid of glass in the winter months. A great depth of soil is not required, but it should be rich and friable. Sowings may be made as early in the year as the weather will permit outdoors in a warm position; if under a frame-light, earlier still. These will mature in time to be replaced by a summer crop. A supply of fresh young Carrots may be secured all through the winter by sowing seeds of the Stump-rooted or "Horn" varieties in August, choosing a warm site. The roots will have attained a fair size by the time cold weather approaches, and although active growth may be stopped, their preservation may be assured by covering the bed with leaves or other protective materials.

The "intermediate" section is well-described in its appellation, for the roots are of medium length, tender, and fleshy; and by good culture can be made to acquire increase of girth to make up for shortness. These Carrots are very useful for summer cookery. They grow speedily, and may be lifted when young or in maturity. The latter will make the roots amenable to storage. Seeds may be sown from March to the end of May. The standard variety in this section is undoubtedly *James' Intermediate Scarlet.*

The longer style of Carrot is usually a much coarser vegetable, and a useful main-crop. Early sowing is best—as soon as the weather conditions and state of the soil facilitates the operation. A rich, very deep soil is most essential, with all manure in the subsoil. Good cultivation all through the period of growth must be given, as neglect will induce the formation of a hard core, to the detriment of the cooking qualities.

There are many kinds of the long type—white, yellow, purple, red. Of these the *Long Surrey* is a good selection, also the *Long Red.* The white, yellow, and purple Carrots are of too coarse a nature for garden culture, being more suited to cattle, poultry, etc.; *Wiltshire Giant White* is one of the best of these.

A good dressing of soot given to all land devoted to Carrots

will always prove beneficial, and soot and guano may be applied during showery weather around the young plants.

Carrots are the prey especially of the wireworm, slug, and leather-jacket; and the maggot is often destructive. These may be combated by the previous application of gas-lime (see page 144); also by the use of wood-ashes, sand saturated with paraffin, lime, and soot upon the soil around the growing plants.

BEET (*Beta vulgaris*).—This sweet, nourishing salad-vegetable may be grown wherever a moderate depth of rich soil exists—aye, even in the flower-border, for the Beetroot's ornamental attributes are quite equal to its useful qualities!

Dealing with this phase of Beet culture before passing to that of the kitchen-garden, it may be said that, of the many vegetables which possess the decorative as well as the utility side of usefulness, Beets surely take a rank to the extent which fully entitles them to a place amongst our choicest flowering and foliage plants—a prominent place, too, in the way of providing rich colour effects amongst the lower growth of leafage in the border—a spot where very often in dry weather is much that is unsightly in the presence of fading and soiled foliage. Deep crimson red, rich golden yellow, and glistening whitish green placed here and there amidst the ordinary greens and browns of the flower-plants, add considerably to the beauty of the whole; besides which, the flower-border is, as a rule, in a state of rich friability, well adapted to root action, so that Beetroots will be quite at home therein, and appreciate their aristocratic surroundings to the extent of affording additions to our food supply in the shape of some edible roots. At the same time, too much should not be expected in this direction from a tap-root cultivated principally for the beauty of its leaf-development, which is accomplished at the expense of the root. Some of the ornamental varieties of Beet will be found to be considerably affected by this principle; but the round or turnip-shaped sorts—usually crimson-leaved—give splendid roots under almost any conditions. A few seeds of both the ornamental and useful varieties may be sown at intervals along the bed or border, at the time when spring-sown annual flower-plants are being thinned, thus effectively and beautifully filling up blank spaces. Suitable sorts for this purpose include: *Brazilian*, having leaves two feet in length, beautifully veined, and of rich scarlet, crimson, and yellow colours; *Willow-leaved*, a newer introduction, with dark,

bronze-crimson, narrow, willow-like leaves, in neat little bushes, suitable for edgings or bedding, one foot high; *Chilian*, in several colours, one-foot leaves; and *Dell's Crimson*, both useful and ornamental, deep dark red, with excellent roots.

A more practical matter is the cultivation of Beetroots in the kitchen-garden, which is, on the whole, of the easiest description, provided an open situation and a deep, freely-working soil be chosen. As with other tap-roots—perhaps more particularly so—the soil must be well dug, and deeply manured, with no forcing materials placed in the upper portion of the ground. In selecting the site, and subsequently sowing the seeds, harvesting facilities should be particularly kept well in view, as the Beetroot is so easily injured by careless removal from the ground. It only requires the smallest bruise or breakage to ruin the whole vegetable—both in flavour and quality—the damaged root presenting a most unattractive, anæmic appearance when cooked and placed upon the table, instead of possessing that rich, crimson hue, its finest attribute in decorative cookery. These facts enjoin the greatest care in removing the roots from the soil. The fork is the best tool for this purpose, and it must be thrust down well beneath the root to be lifted, so as to bring it forth intact.

The storage of Beetroots is an important operation, for they must be well protected from damage and deterioration. It is sufficient to shake the earth from the roots, without washing or trimming, and place them where they can be easily got at in sand, or ashes, and in a well-protected, dry situation, for they will probably be frequently required for use. Never use a knife or any sharp instrument upon this vegetable until it has been sufficiently boiled. Do not *cut* off the leaves; *twist* or wrench them off. Prior to cooking, the roots are well washed to remove as much of the dirt as possible; then they are boiled in an old saucepan kept for such purposes. After the cooking is completed, the roots may be scraped and thoroughly cleansed, and cut in any manner that may be desired, without the least detriment to them; but it is as well to again emphasize the truth that it is fatal to attempt anything of the sort at any previous stage. *Dell's Crimson* and *Egyptian* are good round sorts for shallow soils; whilst there is a good choice of varieties for the deeper soils.

In addition to the foregoing utility Beets, there are others that are grown for the sake of their leaves and stalks rather than the root. One of these is the *Perpetual* or *Spinach Beet*

(*Beta maritima*), which will produce a quantity of green leaves, to be cooked as Spinach, during summer, autumn, and winter; and another variety is called *Seakale Beet* (*Beta cicla*), on account of its use as a substitute for seakale, the white mid-rib of the leaf forming an excellent, delicate dish for summer and autumn use. Seeds of these kinds are sown in April or May, in drills, in an open situation. The soil must be good, and well worked and manured. Severe thinning of seedlings—quite sixteen inches from plant to plant—is necessary, and waterings in dry weather. The green- and white-leaved Beets must be carefully managed with regard to gathering for use, the outside leaves being removed first, and the inner ones left to expand for later pickings. Moreover, the leaves are to be used when perfectly fresh, green, and not too mature, otherwise they are very tough and not worth cooking. In the case of the Seakale Beet, the mid-rib of the leaf only is used. This can be grown to quite three inches in width, is pure white in colour, and capable of being blanched to a high degree of efficiency; indeed they are said to be quite equal to Asparagus, when peeled and well cooked. It is recommended that the stalks be earthed up after the manner of Celery.

SEAKALE (*Crambe maritima*).—Native to British soil, Seakale may be found growing along the seashores of these isles as a wildling. Pressed into the service of the garden, it becomes a delicious and palatable vegetable. To bring the plant into this desirable state, however, good cultivation in the richest of soils is necessary, and the stalks require a thorough blanching before their utilization upon the table becomes possible. This blanching, moreover, is effected in a different manner to that in vogue for Celery, Asparagus, or Rhubarb—these three requiring a certain amount of light and air to produce them fit for food; whereas Seakale is both forced and blanched in total darkness and absence of air. When well blanched, Seakale becomes a delicacy of great merit; and there is evidence of this in the many substitutes for Seakale—any vegetable whose leaf-stalks possess qualities approximating a similarity to Seakale being made to do duty for the real article. But as anyone with a moderate amount of space and a fair depth of soil at his disposal can successfully grow Seakale, there would appear to be little reason for the introduction of substitutes.

Seakale may be raised from seeds, and although there is

nothing difficult in this operation, it would prove a tedious and unprofitable one for those who wish to obtain a supply for present consumption, as quite three seasons are wasted whilst the plants are progressing towards maturity and a usable size. The seed is sown upon a well-trenched and manured plot, about the last week in March. The seed-bed may previously have been treated with a thin layer of salt. Sow very thinly, two inches deep, and strew wood-ashes in the drills. Thin out the seedlings, leaving the best, to about six inches apart. Liberal waterings, both clear and manurial, must be given; also top dressings between the rows of salt, soot, ashes, etc., and the hoe frequently used.

Strong one-year-old plants are chosen for the permanent beds, to be transplanted into similar quarters in which they passed their existence as seedlings. Of course, the seed-bed can be transformed into the permanent location, if desired, in which case the seedlings must be thinned out to about two feet apart, and given food and generous culture to ensure strong roots resulting.

Whether from home-sown seed, or from roots purchased from the nurseryman, the subsequent procedure is the same.

Cuttings may usually be purchased cheaply from the nurseryman. They consist of thong-like roots, about five inches in length, which are taken off the base of the root-stock when lifting, preparatory to forcing. The top of the cutting will be recognized by the square cut with a few growth buds showing. The base will be cut in a sloping direction. There thus can be no confusion as to how to insert them in the ground. A rich rooting medium is necessary, if full-sized forcing plants are desired the following autumn and winter. The end of March is a suitable time to plant in cold, stiff soil, but on soils of lighter texture, a fortnight earlier. Dibble the cuttings one foot apart in the row, and two feet apart between the rows. See that the crowns are about an inch below the level of the ground line. When growth is active go over the plants; it will then be found that numerous shoots are springing from the crown. These should be reduced to one on each root, choosing the strongest.

The frequent use of the hoe during the growing period is all the cultural detail required, for they are not appreciably affected by drought, as the long, thick roots which spring from the base of the plants search deeply for moisture. On the approach of autumn the leaves will show signs of decay, and when, after a few sharp frosts, the plants are perfectly rested, they are in a

suitable condition for forcing. Lift the crowns as carefully as possible, preserving all the strong roots, for these are the material for ensuring a supply of plants in the future. After removing these roots, place from six to nine crowns in a nine-inch pot, using any light, porous mixture. See that the crowns are just above the level of the soil, when potting up is completed. A good watering will settle the earth around the roots. The pot may be placed under the greenhouse stage, with another pot inverted on it, in order to exclude all light. Boxes or other receptacles may be pressed into service, but pots are better. A few crowns thus potted up at intervals of fourteen days will keep up a nice succession of this succulent vegetable. Where no artificial heat is available, the crowns may be forced without lifting from the soil in which they are planted by the aid of a few Seakale pots, or boxes—in fact, anything which excludes light—relying upon littery manure, leaves, etc., to give the necessary heat.

CHICORY (*Cichorium intybus*).—This is another floral vegetable of merit, greatly neglected, and but little appreciated. In the first place, it grows wild inalmost all parts of Britain and Europe, and a plant or two, removed from the roadside into the garden, prove very ornamental in the flower-border. Again, seeds of the large-leavedkinds sown thickly, in drills, produce long leaves like those of a Dandelion, which, although bitter, may be used in salads, or, better still, thoroughly blanched like Endive, when the bitterness is eliminated. The leaves may be gathered several times during the year. As a vegetable, Chicory becomes a delicacy. For this purpose, the large-rooted, or *Witloof*, Chicory is used, the latter being a product of Belgium, where this vegetable is grown to perfection. The roots of these plants are used in the manufacture of coffee chicory. The varieties are the *Magdeburg*, *Brunswick*, and *Witloof*.

Seeds are sown in the open ground, in June, in drills, and the resulting plants grown on until end of autumn, when the roots are removed from the ground, shortened to about eight inches, all secondary shoots removed, and the leaves cut off. All roots bearing several heads or indifferent foliage are discarded. A trench i opened in the ground, sixteen to eighteen inches deep, and the roots placed upright in it a short distance from each other ; the necks thus being quite eight inches below the surface of the soil. The trench is then filled with good, light soil. A layer of manure or leaves may next be placed over the spot,

to a height of two or three feet. In a month or six weeks' time, the head of leaves will have grown to a good size. The roots are then taken up, and the splendidly blanched head of leaves cut off with a small portion of the root attached. This head makes a delicious salad or boiled vegetable.

SALSIFY (*Tragopogon porrifolius*), the Vegetable Oyster, combines ornamental (floral) qualities with useful food possibilities. The flower, when the plant runs to seed, is pretty and of a violet colour. The roots are six to eight inches in length, about one inch in diameter, and possess a smooth yellow skin. Seeds are sown in the spring, in drills, and the seedlings thinned to about four inches apart. Good, well-dug, and finely-pulverized soil grows the best roots, and the hoe and watering-pot will be the principal things in demand during the growing season. The general tap-root treatment may be given. The seed-drills should be kept moist, or germination will be uncertain. The roots are boiled as a vegetable, and are a delicacy; while the young and tender leaves may be used as a salad.

SCORZONERA (*Scorzonera hispanica*).—A Spanish vegetable, resembling Salsify in most points, especially culture, but it has a black skin and yellow flowers. The roots, moreover, may remain in the ground a second season, and continue to grow larger, without deteriorating in flavour or texture—a fine quality indeed! Like Salsify, the roots are boiled as a vegetable, and the young leaves used as a salad.

RHUBARB, that popular medicinal vegetable-fruit of early spring, requires a moist, deep, mellow, well-manured soil, which it does not always obtain, for this useful plant is more often relegated to an out-of-the-way spot in the garden, on account of the room it occupies, and left much to itself until its owner requires its produce; and then, perhaps, a small heap of manure litter, leaves, or an old basket or box is thrown over the crowns in order to force them to yield up their harvest. A far better procedure would be to give the plant the richest and deepest soil of the garden, and to drain the site well beforehand. Four feet of root-run is none too much for Rhubarb; and copious supplies of liquid manure may be applied all through the growing season with splendid results. The plant is propagated by slicing the fleshy root into suitable pieces, each with one or more crowns attached, and planting in good soil from three

to six feet apart. Seeds may also be sown, but the process is tedious and without advantage. Too many stalks should not be pulled at once, when gathering for use; and the method of detaching the stalk should consist in an outward twist, so as not to break off a portion of the crown as well. Close cropping, also, weakens the plant.

Rhubarb may be forced for early use; of course, this process entails blanching, and the stalks are rendered somewhat insipid, although delicate and very welcome, considering the time of the year.

For forcing purposes Rhubarb plants must be quite three years old and have firm, plump crowns. Various places may be utilized for the work—cellars, outbuildings, mushroom-houses and sheds—but if attempted during the winter months there is no better place than under the bench in a greenhouse where a little warmth is available, this, of course, ensuring quick, tender growth. Lift the roots from the ground with a good ball of soil attached seven or eight days before they are required, and stand them in a frost-proof shed. A bed of light, rich soil may be made up on the floor, or the roots may be planted in boxes, the crowns in either case being left uncovered above the surface. Water with tepid water, maintain a moist temperature about the plants, and exclude light. If a temperature of from fifty-five to sixty-five degrees is available, satisfactory sticks of Rhubarb will quickly be produced. After a time the roots will become exhausted, so that if a continuous supply of stalks is required, other roots must be planted at intervals of a few weeks. Rhubarb can, of course, be forced out of doors similarly to Seakale, early in the spring, by heaping over the roots such materials as littery manure, leaves, straw, etc., or by placing a box or skep over the crowns.

YAMS (*Dioscorea batatas*).—Ornamental and useful, the Chinese Yam would probably find a place in many a garden were it not for its bulk. The roots attain large and long dimensions, and require great depth of loose soil to grow in. They are floury when cooked, of good flavour, and keep well. The best plan of culture to be adopted is to form high ridges of soil, upon the tops of which pieces of the roots, root-buds, or bulblets, are planted, the ridge affording facilities for harvesting. Moisture is very essential. The habit of the Yam resembles that of the Runner Bean. Long twining stems, really handsome in appearance, are produced, and stakes or trellis are necessary

to support them. Small roots may also be started in heat and planted out, which procedure will ensure an earlier and heavier yield. Lift the roots in November and store them. Being quite hardy, however, the roots may be allowed to remain in the ground a second season; they will improve in size, but deteriorate in flavour.

HORSERADISH (*Cochlearia armoracia*).—Horseradish will grow anywhere, and thrives under oppression. A garden overrun with it is a true sign of neglect, and the individual whose lot it is to eradicate the roots has my sympathy. But, nevertheless, the Horseradish is a useful vegetable commodity; and if it becomes a pest and a nuisance, the gardener is alone to blame. There are too many instances where roots are planted in some out-of-the-way corner, cultivation being left entirely out of the question; the result being ugly forked specimens, with just a crown and a mass of roots, which are of little use. During the months of November and December, when the soil is workable, the Horseradish-bed may be taken in hand, and, if managed properly, there need be no lack of useful roots, in due time, without the fear of encroachment beyond the specified limits of the bed. There is no need, moreover, to select the best site in the garden, because the Horseradish is accommodating enough to thrive in any situation. To grow straight roots the soil must be deeply worked, and, if poor, some well-decayed manure applied. Pieces of young, straight roots about six inches long, and furnished with a crown, should be selected. Gently scrape off all rootlets that may be upon the selected piece, without injuring the skin. Plant the roots about nine inches apart, and bury them so that there are three or four inches of soil between the crowns and the surface of the ground. Growth will make its appearance the next spring, and by autumn there will be an abundance of useful sticks. The bed should be treated in the same manner the following winter, though there is no real necessity for changing the position. If the ground is well dug and manured annually, Horseradish may be grown on the same site for many years. One other method consists in making a very deep hole with a long dibble, and, selecting a fair-sized, straight young root with a plump crown, shorten it to about four inches in length, and drop it into the hole, pushing it gently to the bottom. Do not fill the hole with soil. The plant may also be grown upon ridges of soil, adopting either of the foregoing

methods of planting, in order to secure facility of lifting the matured roots.

EVENING PRIMROSE (*Œnothera biennis*).—Although the roots of this plant, used in a young state, before the plant sends up its flower-spike, are edible, even tender, I do not recommend it as a vegetable; still, it is used as, and really is, such. I mention it here as a tap-root worthy of a place in the kitchen-garden on account of its gorgeously beautiful flowers, and as an illustration of my idea of combining the beautiful with the commonplace in the vegetable domain. A few of these four-feet plants growing in an odd corner where little else can be planted, along a fence, against a shed or a wall that may be unsightly, or by a manure-pit or rubbish-heap that requires to be hidden, are extremely useful and ornamental. The Evening Primrose is a biennial; seeds never fail to give good results, and little or no culture is required.

LARGE-ROOTED OR HAMBURG PARSLEY, an excellent vegetable with a good-sized edible tap-root, is dealt with under the heading of "Parsley" (page 142). Its culture, however, coincides with that of the commoner long-rooting vegetables.

RAMPION.—Particulars of this useful plant will be found in the Herb Section (page 130); but, being a tap-rooted subject, demands mention herein as requiring soil and culture conditions usually afforded plants with long roots.

Attention may be drawn at this juncture to the long-rooted varieties that occur amongst the strictly turnip or ball-shaped roots. They include long Radishes and Horn Turnips, both of which require treatment similar to that accorded to Carrots and Beet.

The Storage of Tap-Root Crops.—Carrots, Beet, Chicory, Scorzonera, and Salsify require to be lifted when matured and stored out of the way of damp and frost. Large quantities are usually stored outdoors in pits or clamps; but smaller lots should be given a place indoors, placed in dry sand, or where available in an outhouse or cellar. Arrange the roots in double rows, placing the crowns outside, and over each layer of roots place an inch of sand. When required for use commence with the top layers. In the event of severe weather being likely to set in, Parsnips may be stored. Many gardeners do not lift this crop, but cover the ground with a thick layer of dry straw or bracken.

SECTION III

LEGUMINOUS VEGETABLES

LEGUMINOUS vegetables—Peas, Beans, etc.—are not only valuable as a nourishing article of food for human consumption, but they also contribute to the soil in which they grow a large share of its fertility. The roots of legumes have a natural habit of collecting and storing nitrogen, which may be seen in the shape of small nodules clinging to the roots when pulled from the ground. The strange fact also remains that, although nitrogen is stored up in this manner and rendered available as food for the plants, the latter actually require a further supply, given artificially, to ensure heavy crops. This may be explained by the affinity which leguminous vegetables have for nitrogen, enabling them to absorb a large amount of this chemical without causing undue growth, which would be the case with many other subjects; the surplus, it would appear, being stored by the roots in the most convenient manner. Be this as it may, the peculiar trait is a wise provision of Providence bearing upon the manurial development of the soil; and the cultivator may have the certain and satisfactory knowledge that the more such plants are grown in his garden, the larger an amount of stimulating, sustaining food is being placed in the soil. It is beneficial, then, for the roots especially of leguminous crops to remain in the soil after the crop is cleared; they should never be thrown aside or burnt, but buried and dug in with the earth after the manner of ordinary organic manure. The haulms, too, should be burnt and the ashes returned to the soil, for they contain valuable chemical food substances. It will also be seen that if nitrogen-loving crops, such as Greenstuffs, Spinach, or Lettuces, be planted in succession to Peas and Beans, great advantage will accrue from the supplies of nitrogen existing in the soil. Deep digging,

heavy manuring, moisture, and good cultivation are essentials with all members of this wonderful family; and it is the proportional extent in which these necessities are given that determines the weight of the crop. Bone-meal, superphosphate, soot, and good liquid manure are excellent fertilizers for legumes.

PEAS are most nutritious vegetables, and to grow them to anything like perfection needs strenuous work in the preparation of soil. It will be found quite impossible to grow large pods full of rich, green Peas, by just digging the soil over one foot deep. The ground must be trenched quite two feet, and if the soil is not of sufficient depth, it will be better to take out a trench and dispose of the bottom spit, putting in its place something of a better nature. Old garden refuse, such as rotted vegetable leaves, well dressed with lime, soot, etc., will be found admirable to mix with this bottom spit. Then the good soil originally taken from the top can be put in its proper position, adding well-decayed manure as the filling up proceeds. This completed, a sprinkling of soot should be well worked into the surface soil, with which a little superphosphate can be mixed with advantage. Remember to sow very thinly in the case of the giant podded sorts, for they develop plants five or six feet high. When the plants are up a few inches they should be earthed up, pushing the soil well among them with the hands. Then staking should follow, using good ash or hazel boughs. If the weather is very dry, the plants will be benefited by a good watering twice a week, and a little nitrate of soda will make the growth more vigorous.

Those who have heavy, badly-drained soil will be handicapped as regards early Peas, as, owing to very heavy rainfall, the land is often waterlogged. It will repay growers to forward their early crops by sowing under glass. A much better selection may be made, too, as one can grow sorts which, if sown in cold, wet soil would fail. When sown under glass it is not necessary to use fire-heat, provided the seeds are sown sufficiently early, and though germination is slower, the plants will be large enough by the time our variable seasons permit of planting out. Seeds may be sown in cold frames, or any cool glasshouse, but the young plants should be stood as near the glass as possible so soon as they appear above the soil; while, if grown in cold frames, care must be taken to give sufficient shelter should the weather be very severe. When sowing I would advise the use of a loamy soil, as this induces

strong root action. It is an excellent plan to sow in pieces of turves, obtainable from a good pasture, keeping a sharp look-out that no wire-worm is present therein. Perhaps it is safer to use turf that has been cut some little time and stacked. Place the strips of turf close together in the frame or house, grass side downward. Draw a light drill in the fibrous soil down centre of each strip, and sow the seeds evenly, afterwards covering with some good soil. The frame must then be kept closed until the seedlings break through, when careful ventilation will be required. At the time of planting out, the turves can be lifted with the mass of roots, and placed in well-prepared drills or shallow trenches. For smaller quantities, five-inch pots are doubtless more useful, although the root-ball is often broken, thus injuring the roots when planting. Eight or nine seeds may be sown in each pot, thinning the resulting plants to the six strongest and best-placed. Avoid forcing of any kind. Another excellent way is to sow seeds in boxes. The seedlings from this process lift well if the soil is made firm and the boxes are not too deep. A little moisture will be necessary till growth is active; later on, ventilate freely in fine weather, and plant firmly.

Growing Peas for Exhibition is not an exacting operation when suitable soil is provided. The main point is to secure well-formed pods filled with a regular row of the largest Peas that can be induced to form therein; and this is a matter of skill on the part of the grower. No amount of instructions can ever replace individual, personal, skilful attention to details and essentials. A deep, well-worked, richly-manured soil is one of the latter, but it must be sweet and clean also, otherwise disease and insects will certainly step in. Wide planting is another; whilst the provision of moisture and liquid manure may be left to the intelligence of the would-be exhibitor. As a large number of pods will not be required, the small space devoted to the plants may well be given every attention to ensure success, such as the entire removal of indifferent soil, the careful mixture of well-rotted manure, soot, charred refuse, wood-ashes, the selection of a site calculated to afford the greatest amount of light and air, and yet allow of the retention of sufficient moisture at the roots. All such essentials will, of course, be carefully planned and provided. Then follows the selection of the pods which show the most promise, and these should be carefully marked, all others which might affect the development of these precious specimens being removed, if

thought proper. A sufficiency of selected pods should be allowed to remain, however, as a reserve stock is never to be despised. The selected plants should have an occasional dose of liquid manure, and not more than two or three pods be allowed to stay on each plant. It rests thereafter with the grower to see that these selections develop to the quality and size desired. When ready to gather, do not handle the pods, but cut them off with a pair of scissors, for the destruction of the "bloom" spoils their attractiveness and chances of successful competition with more carefully managed specimens.

There is such a bewildering array of varieties, heights, constitutions, and claims of superiority among Peas that it becomes a difficult operation to make a fair and impartial selection.

The early sorts are mostly dwarf or of medium height. *The Pilot* and *Peter Pan* are the earliest Peas yet introduced; may be sown in autumn. *Telephone* and *Telegraph* are two grand old sorts found in every garden where tall Peas are grown. Tall *Sugar Peas* possess edible pods. For the main crop there is a choice selection of three- to six-foot sorts; and for the last sowings (in May and June) the best variety, perhaps, is *Autocrat*. Besides the above, there have been introduced lately Peas of immense size which deserve the attention of all who exhibit.

Pea Mildew (*Eresiphe Martii*).—This disease is very common, especially on light soils and in dry weather, particularly towards the close of the season. The fungus at first makes appearance on the surface of the leaves, which become whitened on both sides, and fade to a pale yellow colour. Dry weather is propitious to its development; wet checks its progress. Nourishment, such as mulching, watering, and syringing in dry seasons, is the best moderator of its evil influence. Applications of potash and nitrate of soda after the first pods are set are helpful; and sulphide of potassium (one ounce to four gallons of water) will arrest the mildew.

SCARLET RUNNERS (*Phaseolus multiflorus*).—I shall not be far wrong, if I say that there is hardly a garden, large or small, wherein is not seen the Scarlet Runner; and a reminder or two concerning the culture of these vegetables will not be wasted. As the plants are voracious feeders and appreciate a cool, moist root-run, no pains should be spared in providing them with these essentials. The stout roots also penetrate the soil

to a considerable depth, so that it well repays to break it up at least two spits deep. With the lower spit plenty of partially-decayed manure should be mixed. If the soil is sandy, cow or pig manure is best; but if clay is the principal element, that from horses is preferable. Some superphosphate or steamed bone-meal—a good handful of either to each yard run of row—should be strewn upon the surface and dug lightly in. If the soil is very stiff clay, burnt earth, old potting soil, road scrapings, anything of a porous nature that will tend to render it more friable, may be added. The time usually selected for sowing Runner Beans is the second week in May; it is inadvisable to sow earlier because the plants are so easily injured by frost. In cold districts, and where early crops are desired, the best plan is to sow the seeds in pots or deep boxes and bring the plants along in a cold frame, transplanting them to their permanent quarters about the end of May. Where such a system is adopted, it is highly essential that the plants be grown on as sturdily as possible; any attempt at forcing results in weak, attentuated specimens, unfit for cultivation. In sowing outdoors, make a trench about three inches deep and fifteen inches wide; this facilitates watering during hot weather. The seeds should be sown in two rows in the trench, placing them eight inches apart in the rows and leaving the rows about ten inches asunder. Two inches is about the right depth to sow. When the seedlings appear, steps must be taken to guard them against slugs, which are particularly fond of them. Apart from trapping the pests, ashes, soot, or lime may be sprinkled round the plants, but the soot or lime must not touch the foliage. As soon as the plants begin to run, stout stakes, twine, or coarse netting about six feet high must be placed for them to climb. The plants will climb much higher than six feet, however, if supports are available. The plants may be topped—i.e., the centres pinched out when about one foot high—if desired; but this is far from an ideal method of growing Runner Beans, for wherever a pod rests on the ground its flavour is impaired. During hot weather, and particularly when the plants commence to flower, copious supplies of water must be afforded, with weak liquid manure, once a week. When the plants reach the tops of their supports, the growing point of each should be nipped out. The Scarlet Runner is a perennial, and roots may be either left in the ground, with a protective covering, or pulled up, tied in bundles and hung up in a dry shed all winter. Planted out next season, these

roots will spring into life and afford a supply of Beans much earlier than from seed-sowing. It should be particularly noted that, although the pods and young seeds are edible and harmless, the matured seeds are very poisonous, and should be kept out of the way of children. The Scarlet Runner has been of late greatly improved, and fine strains may be bought.

Other excellent Runner Beans may be found in the *Painted Lady*, an ornamental variety, the white-flowered *Czar*, and the variety that produces those enormous, yard-long pods, which is more novel than useful. The tall "Butter Beans" are also worthy of notice, for they are extremely tender and a great table delicacy. *Mont D'Or* and *Early Golden Cluster* are two of the best of these.

Although few vegetables enjoy more popularity than the Scarlet Runner or climbing Kidney Bean, many growers fail to give the plants rational treatment, as may be inferred from the poor crops of small pods (especially in towns), which are often the rule. These poor crops may usually be traced to out-of-date varieties, sowing on poor ground, overcrowded rows, inadequate support, and too little attention after pods begin to form. If justice is to be done to a plant capable of growing twelve or more feet in height, and flowering and setting pods throughout its entire length, the provision of a root-run, three feet deep, into which manure of some sort has been freely added, is most essential.

The overcrowded row is a great mistake. Many sorts are quite capable of growing pods eighteen inches long, but only where plenty of room is afforded; and for such as these, one foot between the plants must be the smallest space allowed, If grown in a double row, allow a foot and a half between the rows. Plants growing under these conditions must also have good stakes, ten to twelve feet long, to support the strong growth. This allows of a foot or more being in the ground, ensuring safety from wind. By the advent of August the full length will be covered with extra large leaves, forming an impenetrable fence, ensuring privacy in what might otherwise be an exposed garden. Runner Beans are essentially moisture-loving plants, and any serious lack of this is soon apparent. In giving water do not make the fatal mistake of using it fresh drawn from the tap or pump. Overhead syringing, especially after the flowers open, is greatly beneficial. It should be remembered that pods too old for use are not only worthless, but their presence prevents further growth.

FRENCH OR KIDNEY BEANS (*Phaseolus vulgaris*).—This class of Bean may be described as being of a very delicate character so far as flavour is concerned; but they must be well-grown to ensure this quality. So far as soil is concerned, even one of poor constitution will give a fair return if planted with Kidney Beans; but that is no excuse for attempting such unfair culture. A deep, light, rich soil—sandy loam, for example—is excellent for this vegetable, and will give it a chance to withstand the hottest weather without a great amount of attention as to watering. One essential in the culture of Kidney Beans is wide planting; nothing is gained by overcrowding. To produce an early crop, seeds should be sown under glass, in boxes or pots filled with fibrous soil in which the roots may penetrate and fix themselves; this facilitates transplanting, which may be done in May. Growth under these conditions must not be forced, for stout, sturdy plants are necessary to ensure success. A rich soil, well exposed to the sun's influence, should be given to these firstlings, and a little protection until establishment is assured will not be wasted. The plants are best planted in wide holes, keeping the ball of roots intact. The main crops are sown successively from the last week in April until the end of July, in the open ground. The seeds should be dropped along the drill at intervals of six to twelve inches, according to the variety sown; or at three-inch intervals, and the surplus plants removed and replanted elsewhere. Kidney Beans are not at all exacting in their demands upon the grower's attention; if the soil is right, and kept open, moist, and free from weeds, the Beans will bear abundantly. In gathering French Beans, *every* pod must be removed when of fair size; for if allowed to mature and the seeds to swell, further production is immediately stopped, and the plants cease bearing altogether. A mulch between the rows in dry weather will greatly assist in the formation of pods and the prolongation of bearing.

The variations in French Beans are seemingly inexhaustible. Some are quaintly and prettily marked, others produce handsome flowers, and others again pods of peculiar shape. All, however, are good and delicate, and should be tried in turn as interesting novelties and a welcome change from the ordinary. For early use, *Ne Plus Ultra*, *Pale Dun*, and *Earliest of All* are excellent, and the first-named forces well. The general crop may contain *Canadian Wonder*, *Golden Butter*, and any of the French and Jersey kinds; whilst *Excelsior* and *Negro Mammoth* are good exhibition kinds.

French Beans lend themselves very readily to forcing. A good plan is to sow a few seeds every week or fortnight, so that a succession may be relied on, in four-inch pots (five seeds in each), and then to shift them on into larger pots in which to bear pods. Any old potting soil will serve, and a little old manure should be added when putting the Beans into their fruiting pots. A temperature of sixty degrees forms a good forcing heat. It is imperative that the Beans be freely exposed to light, that they be well syringed to keep them free from red spider, and that they be supported by twiggy sticks as soon as they are needed. If a greenhouse is not available for the purpose, a heated frame will serve the purpose admirably. *Ne Plus Ultra* is an old variety which may be thoroughly depended on. The climbing French Bean is also good for forcing, but not for those with limited accommodation.

It must not be supposed that the ordinary Runner and Dwarf Beans exhaust the list of these vegetables, for there are many others, quite distinct, in shape, flavour, and natural characteristics, and which are extensively used in the country to which they are native. Many of these have been introduced into France, and have found favour there, but have not made much headway in Britain. To mention some of them, there are: The LIMA BEAN (*Phaseolus lunatus*); the DOLICHOS, an ornamental species, grown in conservatories, with beautiful blue flowers; the ASPARAGUS BEAN (*Dolichos sesquipedalis*); the LABLAB or EGYPTIAN BEAN (*Lablab vulgaris*); besides Chinese, Canadian, Algerian, Bulgarian, Japanese, New Zealand, and Mexican species.

THE BROAD BEAN (*Faba vulgaris* or *Vicia faba*).—This Bean is a vegetable of great antiquity, and one of the first to come into use in the earlier portion of the year. Broad Beans like a deep, rich, strong, even heavy soil; a liberal dressing of manure should be applied to light soils. If sown early, the first gatherings may be made by June; and to secure this, sowings may be made either in October, November, and December during mild weather; or, failing that, the seeds may be sown in pots or boxes under glass or in a frame and the plants placed in their intended stations when of fair size. Ordinary sowings for main-crop purposes are made in February and March; and, if a succession is wanted, in April and May. Many gardeners will have noticed that some of the seeds—often the

best—are pierced with a small hole, the work of an insect, probably still in the seed. These Beans are often regarded as worthless, and consequently they have been thrown away. This is an altogether unnecessary course to adopt, for repeated experiments show that seeds such as these are quite capable of germinating well, and developing into plants as strong and healthy as others not attacked.

The seeds may be soaked in water for a few hours to accelerate germination, and sown in rows about four or five inches apart, and two or three inches deep. They may be dibbled in or deep drills drawn, according to the nature of the soil. When the plants are a few inches high, they should be slightly earthed up, especially the early batches, for these are easily affected by frost. After sufficient bloom has been produced to ensure a good crop, the tops of the plants should be pinched off; this will ward off an attack of the dreaded black fly. If sown in a deep soil, it is not often necessary to supply water to Broad Bean plants; but if a hot spell of weather sets in a mulch over the roots will be found beneficial. Bone-meal, soot, superphosphate, and liquid manure may be applied to the soil before and after the crop is put therein, and all manurial applications will be regulated by the quality of the soil and the prosperity of the growing crop. Broad Beans can be grown to a great size by good culture and a judicious use of fertilizers. The *Early Magazan* is probably the best variety for the earliest sowings—on a rather dry, warm and sheltered border in November, in boxes under glass in January, or in the open ground at the end of February. For the main crop, the *Longpods* are useful; also *Aquadulce*, *Bunyard's Exhibition*, and one or two others may be considered for selection as a main crop or for exhibition. For later sowings, the *Windsor* section may be drawn upon.

The beans, not the pods, are cooked, and if gathered before maturation has been completed—full-grown but still young—and properly cooked and served, they make a very delicate and tasty dish; although Broad Beans are not sought after like Scarlet Runners or French Kidneys are, many people confining their desires to one or two dishes only in the season as a palatable change.

SECTION IV

TUBEROUS-ROOTED VEGETABLES

TUBEROUS-ROOTED vegetables, represented by the household Potato, may be generally given a light soil, the wisdom of which proceeding is exemplified in the fact of the large amount of room required for tuber development, and the fatal results which must ensue if a hard, unyielding soil is to be fought during such development. Waterlogged ground, too, is to be avoided; and depredations by slugs, and wire-worms, are to be guarded against. The other members of this group are well worth consideration. The gardener possessing a light, sandy soil, well manured, and the means of maintaining a fair moisture, has the best medium for tuber-production.

THE POTATO (*Solanum tuberosum*).—The humble Potato is generally supposed to be simply an article of diet, but there are other uses made of it. By chemically treating them, Potatoes are quickly turned into a beautiful hard substance from which many so-called ivory articles are made. Enormous quantities of starch are also made from Potatoes. In America 16,000 tons are annually used for this purpose, the starch being obtained from small tubers thrown out during grading; sixty bushels yield one barrel of starch. Spirits and other chemical products are also obtained from Potatoes.

For edible purposes, the Potato has proved itself invaluable. At the present moment of writing, the Potato supply is a burning question in certain quarters, and a most important one in nearly every country, thus showing the large part Potatoes take in providing the world's food. A wise gardener is he who grows Potatoes—but there are limits to such action! A great mistake is made by possessors of small gardens endeavouring to raise a quantity of main-crop Potatoes from a piece of ground of small

dimensions. Potatoes grown in bulk require much space; therefore, where the latter is limited, a *few* rows of the *early* short-haulm varieties should be planted—aye, even twice during the year! An available greenhouse or frame also may be well utilized by the skilful gardener to obtain tubers; for, however small, *new* Potatoes are always welcome.

The secret of Potato culture consists in the constant stirring-up of the soil. From the moment the purple head of the shoot appears above the surface of the ground the hoe or fork should never allow the soil to rest for any length of time. Hoeing, breaking up lumps, large and small, loosening all soil with a tendency to settle down firmly, applying soot, wood or vegetable ashes, and perhaps a little artificial manure at the same time—this is the process that aids the formation of the popular tuber in all soils: strenuous cultivation, in fact!

There are varieties of Potatoes to suit certain soils; and it is a wise plan to take note of this when choosing the sorts to be grown. The soil which suits the Potato in general is a deep, thoroughly-drained, sandy loam; but this is not always in evidence, unfortunately. The Potato, however, is an accommodating plant, and will thrive more or less on most soils, especially if measures are taken to improve those soils by digging and trenching the heavy, and manuring the light ground. Organic manure, by the way, should always be applied in the autumn, if at all, never in the spring; and ground that is rich in old manure and vegetable matter (that which has been applied for a previous crop), is the best medium.

Some time before planting, the "sets" should be placed close together in shallow boxes, "eyes" upwards, and put in a light place (near the glass in greenhouse or conservatory, or a shed with glass roof or skylight), until the sprouts begin to turn green and purple. When in this state, they may be planted with a certainty of quicker results than would obtain if planted earlier without being allowed to sprout in the light.

There are several methods of planting. On light ground only should the dibble be used; the hole thus made would in heavier soils simply form a receptacle to hold rain-water, wherein the "set" would rot instead of growing. On medium and heavily-inclined staples, planting should be performed while trenching is being done—i.e., a spade-deep trench is taken out, the subsoil broken up and pulverized, and the row of "sets" placed upon it; then the next spit of surface-soil is dug and thrown over the "sets." Two or three feet of ground are next dug in a similar

fashion, which will allow sufficient space, when another row of Potato "sets" may be planted. This system, I consider, is the best method of planting the tubers; the soil lies loosely both under and over the "sets," and forms an excellent medium for a spreading subject like the Potato, which requires ample and free room for development. A deeper trench is best excavated in sticky, clayey soil, the bottom broken up or loosened, and the opening partly filled with a compost consisting of any light soil that may be obtainable, with soot, salt, ashes, sand, road-scrapings, old spent manure, chopped turves, burnt rubbish, and similar light and porous materials, the "sets" being covered with similar compost. During subsequent growth, the intervening soil may be forked over and the same class of materials incorporated until it becomes of better consistency, suitable for being drawn around the young shoots, which operation should be a gradual and continuous one throughout the whole period of growth.

Superphosphates, sulphates of ammonia and potash, and guano are good Potato artificial manures. Nitrate of soda tends to produce a "waxy" Potato; lime, if applied, should be put on the ground some time before planting.

To ensure a supply of new Potatoes throughout the whole summer, keep back a number of seed-size tubers of the early varieties. Store these with their eyes upwards, exposed to all the light possible, in a cool place. When the earliest crops are being dug, in June, and a few roots are lifted, replant the same piece of ground from the tubers in store, repeating the process until the middle of July. The state of the ground at this season favours a very rapid growth, and in a few days after planting the shoots will appear above the ground. A week later give a good dressing of soot or a little nitrate of soda, and earth up immediately afterwards. Good-sized tubers from this second planting may usually be dug early in September.

Those who force a few early Potatoes will find *Sharpe's Victor*, if old, still a very reliable variety. The dwarf haulm renders it specially adapted for this purpose, and if it is not such a heavy cropper as some of the newer kinds, its qualities are undeniable. For early work in the open Sharpe's Victor is also valuable, for if planted in a warm and sheltered border early in March it is ready for use in May.

Potatoes in Pots.—Early Potatoes may be had by the possessor of a greenhouse or other structure from which frost is excluded, the secret being to afford the plants unobstructed

light, and give them air on all favourable occasions. The temperature may range from fifty degrees at night, a little air being admitted, to sixty-five degrees by day, with full ventilation. This accords with the usual greenhouse temperature from and after the early part of February, in which Potatoes in pots do exceedingly well, if arranged in light positions on the borders or on shelves. Potatoes to be forced must first be sprouted by being placed in trays of leaf-soil on a greenhouse shelf in a light position. Short-topped varieties are the most suitable. The soil should be in a moist condition at planting; and very little water will be required for a time. The shoots on the tubers should be some three-quarters of an inch below the surface, and the surface of the soil at least three inches from the top of the pot. When once rooting has commenced, liquid supplies will be needed, always giving enough to thoroughly moisten the soil. Superphosphate four parts, sulphate of potash one part, and magnesia one part, forms a good manure to use in liquid form, given at the rate of half an ounce to one gallon of water. When the plants are near maturity, keep them on the dry side in order to secure high quality in the tubers. Potatoes can, of course, be forced in a frame, providing that a good steady hotbed is available.

Potatoes may also be propagated by means of the "eyes" or embryo shoots, a quarter-inch long, furnished at the base with embryo roots. The sprouted "eyes" should be removed with a portion of the tuber attached. These detached portions are planted three inches deep and twelve to fifteen inches apart. Each shoot should be surrounded by a handful or two of good light soil and leaf-mould to encourage free rooting. The "eyes" may be also planted in small pots, and placed in a frame until well rooted, then planted out. Before planting or potting the "eyes," rub a little lime on the cut surfaces of the base to prevent premature decay. It is the choice, new, or expensive varieties that usually receive this treatment; but this plan is to be recommended in gardens with limited space, or for the purposes of producing early Potatoes.

When storing Potatoes for winter, preference should always be given to a dry rather than a damp situation. The hole should be cut out a foot or so wider than the heap of Potatoes it is intended to build in it. Cover the bottom of the location with several inches of dry cinders or ashes, and over this place a layer of straw. Go carefully over the Potatoes, and remove all diseased tubers, for if these are allowed to remain, the heat

generated will soon set up conditions favourable to the rapid development of disease, and very soon a large quantity will have become affected. If the tubers are thoroughly dry, there will be no need to delay the covering up; if dampness is feared, however, it will be better to leave the final covering for a few days, unless wet weather intervenes. Straw is a good material for placing on top of the tubers. A thick layer should be provided, and upon this put soil, at least a foot in thickness, leaving a hole in the top to allow any heat which may be present to escape, a small quantity of straw being sufficient protection if needed. Neglect to provide this ventilation hole is always fatal, as the state of the interior of the heap is not suspected, until one day the grower finds the side fallen in, and nothing but a putrid mass is to be seen. Small quantities may be stored in cellars or outhouses, where light and frost can be excluded. Darkness is very essential to prevent "greening" of the skins, which greatly deteriorates the edible value of the tuber, and renders it unsafe for eating purposes; therefore, do not expose to the light. The Potatoes may be stored in a sloping heap at the side of a wall, or in a shallow heap on the floor. When placed in position cover the tubers with a layer of straw; they will then keep safe and sound.

Varieties in Potatoes are very numerous, suited to various soils, seasons, and localities. A good seedsman's list should be consulted before purchasing seed tubers. A selection should be made from each of the three classes of Potatoes—Early (represented by *Sharp's Express* or *Victor* and *Ashleaved* sorts); Mid-season (such as *British Queen*); and Late (*Up-to-Date*, *Arran Chief*, etc.).

Saving Potatoes for Seed.—Tubers of a suitable size for planting next season should be selected. The average size of seed tuber is one weighing about two and a half ounces. Spread the tubers out in the open to "green," and then place them vertically on their narrow ends in shallow boxes, and store these in light, airy sheds, not in dark positions, as this induces premature sprouting and weakening of the tubers. So many gardeners do not pay proper attention either to the selection of their seed Potatoes or to the after treatment of the sets. To this, more than anything else, may be attributed the indifferent crops and the want of character of many varieties. An eye should be kept on the tubers, rubbing off all side shoots as they appear, but reserving those at the top. Allow two to remain, and if they are very strong, the weaker is removed at planting time.

Seed tubers thus properly prepared never shrivel, but keep as plump as when lifted from the soil.

The Potato Disease (*Phylophthora infestans*) develops about midsummer. Yellow spots appear on the leaves, and spread quickly in humid weather, eventually assuming a dark brown colour. On the under surface a mound of spores is produced. The result of germination of these spores is that the young tubers either remain quiescent or become putrid, according to conditions of weather and other circumstances. The tubers so infested are said to be "brown," are unfit for consumption by man. Tubers of infested stock should not be used for "seed." It has been found useful to spray the crop with Bordeaux mixture (see Appendix). This work should be performed at two or three operations, the latter if the season is a wet one and the disease bad—the first spraying in June, the second about the middle of July, and again towards the end of that month; this prevents the spread of the disease, and also prolongs the season of growth, hence the crop will be heavier than a similar crop left unsprayed. As the early varieties are not often materially affected, it is the winter varieties which need to be sprayed. Where the area to be sprayed is not large, it is well to buy the ready-made mixture.

Potato Leaf-Curl is in some seasons very common among Potatoes. One plot may be badly affected while another close by is quite free from it; and it is likely to recur unless the precaution is taken to get healthy tubers, and to plant them in uninfected ground. The most obvious symptom is the curled leaves, accompanied by very poor growth. If a plant is dug up the reason will be seen at once, for the tuber will be found to be as firm as when it was put in the ground. In other words, the young plant has not been able to grow because it has somehow been deprived of its natural food.

JERUSALEM ARTICHOKES (*Helianthus tuberosus*).—A perennial Sunflower, native of North America, producing underground shoots which swell into excellent tubers, this useful vegetable is so well known as to hardly need description; and its culture is simplicity itself. In fact, so prolific is this plant, that it often becomes a nuisance in the garden, for the smallest piece of tuberous root left in the ground will form a new plant—in a spot where it is probably desired to plant some other subject. The plants rise to a height of from four to six feet, rarely produce flowers, but are very useful as a hedge or screen. They flourish

fairly well on a poor soil, if light; but a generous culture will give far better tubers than those of neglected plants. They are in their best condition when the stems have ceased growing, and begin to wither. Frost does not hurt the tubers, which may be left in the ground all the winter. These Artichokes may be eaten raw in salads—a most excellent ingredient, too, if sliced thinly; or they may be boiled, like Potatoes, and served up as a separate dish. They must be boiled unpeeled, receiving a thorough cleansing only; and if allowed to stand long, after they are cooked, before consumption, the slight discoloration that usually characterizes the skins will deepen, and the vegetables become unsightly in appearance. Personally, I cannot recommend them as a "tasty" dish!

THE CHINESE ARTICHOKE (*Stachys tuberifera*).—A most peculiar plant is this Artichoke, thoroughly and typically Chinese in appearance, with tuberous rhizomes, which possess white, very fine skins, and tender, though somewhat watery, flesh. The plant forms a dense little bush of leaves, and produces tubers very late in the season close to the surface, after the manner of the Potato or the Jerusalem Artichoke; indeed, the foliage and stems begin to wither, as a rule, ere the formation of tubers has reached its limit. The rhizomes are planted in good, light or sandy soil, from February to April, according to weather conditions, about twelve inches apart. The subsequent culture is simple—the elimination of weeds, hoeing occasionally, and the provision of water in dry weather. The tubers mature in October, and, as they do not keep very well, should be lifted only as required for the table. Their uses in the latter direction may be in the form of a raw salad ingredient, or fried as a vegetable.

SKIRRET (*Sium sisarum*).—This is a tuberous-rooted subject, usually classed with Herbs, and regarded as a native of China, though it has been cultivated in Europe for many centuries. The tubers, somewhat resembling Dahlia roots, but longer and more slender, are produced in a bunch just beneath the surface of the soil, and, if the medium is a favourable one, push downwards and attain a good length. The flesh of these tubers is very firm, white and sweet, and floury when cooked; the one drawback in its cooking is the central hard core, which has to be removed before the tuber is boiled. However, good cultivation will produce flesh in preference to core;

and it is said that divisions or root-cuttings are productive of tubers that contain a much reduced core; moreover, careful selection of roots will also go far towards eliminating this woody heart from an otherwise excellent vegetable.

Skirret is propagated by seeds, offsets and divisions or cuttings of the roots. The seed is sown either in autumn or early spring, and when the seedlings possess four or five leaves, they are transplanted to their permanent positions. The soil for all purposes concerning Skirret must be very rich, friable, moist, and well cultivated. Division of roots, cuttings, or offsets are planted in March and April, and the subsequent plants treated like those raised from seeds. Copious supplies of moisture and occasionally liquid manure applications are desirable all through the growing season. The tubers quickly form and grow well until the autumn, when they may be taken up for use or left in the ground until required. They are quite hardy, and the effects of frost need not be feared. In the hands of the cook, Skirret may be treated in the same manner as Salsify and similar roots. Experimenters with this subject should try the effects of a few seasons' rigid selection, with the object of reducing the objectionable woody core to vanishing point; then they would possess a most excellent vegetable of great merit and worth.

NASTURTIUM (TUBEROUS-ROOTED) (*Tropæolum tuberosum*).—This native of South America cannot be said to be a very good vegetable, but useful as an ornament. It is a climber, with yellow-orange flowers, and could be used for beautifying an unsightly spot in the kitchen-garden. The tubers are rather pretty and curious in appearance, of the size of a hen's egg, and are planted in April or May, the produce being taken up at the latter end of autumn. Frost will not harm the tubers, however, while they remain in the ground. The culture is very easy and simple, using the hoe to keep the soil loose; an open position is the most suitable one. The tubers are boiled like Carrots or Potatoes, and are rather watery and of indifferent flavour. I recommend them chiefly for ornamental purposes.

OKA PLANT (*Oxalis crenata*).—This is another curious tuberous plant, the roots of which are used as a vegetable. It is a member of the Oxalis Family, in which are other species bearing edible roots. The Oka plant is propagated from tubers, planted in May in a rich, light soil, or preferably started into

growth in heat and planted out afterwards. The stems spread to a considerable extent, and require earthing-up to induce tuber-formation ; these stems are killed by the advent of frost, and the tubers are then lifted and stored. When fresh, the Oka tubers are unpleasantly acid, but this can be altered by hanging them up in bags to dry in the sun or a warm room, when they become sweet and floury. If kept thus hanging for several weeks they shrivel up, and in that state resemble in flavour dried Figs. The tubers are of good size, and may be eaten raw, in addition to the young shoots and leaves, as a salad.

SECTION V

VEGETABLES IN TRENCHES

GROWING vegetables in trenches has mainly a two-fold object—to blanch the matured hearts, stalks, or leaves; and an adequate provision of nutriment-laden moisture. Certain vegetables—Celery and Leeks, for example—are far from eatable in their natural green state, and require considerable blanching to become at all palatable. Others, ordinarily grown upon the level ground, are greatly benefited by being planted in shallow trenches which will hold moisture or a mulch in very dry weather; Peas and Beans are examples of this system of culture. Wherever the soil is prone to excessive dryness, or exposed to drying winds, the utilization of trenches or light depressions would probably enable crops to be grown that otherwise present an utter impossibility. Strong manures, preferably liquid, are the best for trench-work: soot, cow-manure, guano, are three excellent fertilizers, and the first-named may be used liberally.

CELERY (*Apium graveolens*).—Here we have a most palatableh healthful vegetable, requiring long, continuous, strenuous growt, to bring to perfection, yet presenting few difficulties that cannot be overcome by the gardener with a fair soil and some perseverance and common sense. Celery has its drawbacks, certainly—chiefly on account of space requirements, labour, and the provision of adequate supplies of nutriment-laden moisture; but these disabilities—existing chiefly where there is a lack of available means and materials (in which case, Celery culture had better not be attempted)—are well counterbalanced by the advantages derived from the production of well-grown, well-blanched, crisp "sticks" of Celery, upon which one may depend for use in winter salads, soups, etc.; and the fact that

a garden may, in time, receive a thorough deep trenching and subsoil manuring, by a system of devoting a different portion of the ground each year to Celery-trenches, which could not very well be given to it otherwise; for the breaking up of the subsoil, and the absorption thereof of enormous manurial applications—principally liquid—must eventually bring about a reaction in the most stubborn soil, and eventually produce a splendid state of friability and fertility.

There are several methods of growing Celery. Some persons prefer a trench with one row of plants down its centre; others provide a much wider trench, and plant two rows instead of one; while an excellent system, where circumstances warrant, is to take out a trench four or five feet wide—excavating, indeed, a sunken bed—across which the plants are set in rows. Too deep and narrow trenches are often the cause of much trouble. Celery, like other vegetable plants, must have light and air to facilitate growth, and the trenches are only provided to meet its two main requirements—the abundant provision of enormous supplies of clear and manurial liquid, and the necessity of thoroughly blanching the stalks.

Celery, in its natural habitat, is a waterside plant, in which state it is neither desirable or useful, as its properties are then poisonous rather than beneficial; hence, even under cultivation its green leaves and stalks retain much that is injurious to the consumer, this disability being effectively got rid of by the process of blanching.

Again it is necessary to emphasize—and it is so often forgotten!—that Celery requires ample air, light, and space for development; and it is only when maturity is within reasonable distance, and the plants are to be prepared for edible purposes, that these growing essentials may be withdrawn; even then, only to a certain extent, for when the Celery is earthed up a limited amount of air and light penetrates the covering. Therefore, Celery plants may not be planted in what is really a damp, narrow ditch, cut out of a hard soil, with any expectation of good results being indulged in by the grower.

Seeds of this vegetable are sown early in the year, under glass, upon a hotbed or hot-water pipes in the greenhouse, or in a propagator. Germination is somewhat slow. The seedlings must be pricked out early into boxes or frames, and grown on sturdily close to the glass. When they have attained a handy size, a very rich bed should be prepared for their reception, in a warm position, wherein they are transplanted, and given every

encouragement to progress in size until they are ready to plant in the trenches.

There is no vegetable in the garden that responds more to good culture than Celery. It should be remembered that the plant is a gross feeder, requiring copious supplies of water and liquid manure. Plants while growing should *never* lack water. In order to facilitate thorough watering, the trenches should be formed with a slight incline from top to bottom, so that, when water is poured into the trench at the top end, it runs away slowly all along amongst the plants to the bottom end. By this method it is impossible for superfluous water to remain in the trenches. Liquid manure can be applied two or three times weekly. Horse and cow manure make good fertilizers, and an occasional application of weak liquid made from fowl manure may also be given. Soot water is very beneficial. Liquid manure must not be allowed to fall on or to splash any of the leaves.

To check green-fly and maggots, a little dry lime and soot should be spread thinly over the foliage and trench; but to eradicate them successfully, a solution of soft soap and water should be sprayed on to the plants. Let this remain on for a day or two; then, if dry weather prevails, clear water may be used.

Earthing-up can be commenced at any time after the plants have attained adult size, choosing a time when the soil is quite dry. Some growers earth-up their Celery at one operation; others proceed gradually, filling in a few inches of soil when the plants are fairly strong and have got above the trenches. The main earthing-up is given when the plants are nearly full grown. As winter approaches the later rows should be earthed-up as high as possible. A simple plan for blanching is to place a drain-pipe over the plant, or to wrap the stems in brown paper or similar material. When earthing-up, the left hand should clasp all the stems firmly together, and, with the aid of a trowel in the right hand, the soil should be worked around and pressed carefully close to each plant. Good blanching usually takes from five to seven weeks.

The culture for show purposes is much the same as for table use, with the exception that extra attention is necessary in watering, manuring, liquid manuring, and prevention of damage, however slight, to stems and foliage. Quite three times the space should be allowed the plants in the trenches—at least eighteen inches apart. Blanching with soil should *not* be done;

instead, wrap brown paper, three folds thick, from bottom to top of each plant, so that only top portion of the foliage remains visible.

The variations in Celery are numerous. There are white, golden, pink, and red kinds to make a choice from, as well as those tall and dwarf in size.

CELERIAC is a comparatively little-known variety of Celery, in which the root has been developed by cultivation into great size and usefulness. It is an excellent addition to our supply of edible Turnip-rooted vegetables; and, unlike its parent the Celery, it is grown upon the level ground, after the manner of other ball-shaped roots. But it must have a good, rich, moist, well-manured soil, of proved mellowness and friability. Its initial culture is exactly that of Celery—raised from seeds in heat, and thereafter grown on sturdily, and finally planted out, in May. Weeds must be kept down, and copious supplies of water and liquid manure be given; otherwise no further attention is demanded. Old-fashioned gardeners used to carefully remove all the side rootlets from the bulb, under the impression that the main root attains larger size; but I am afraid such procedure—or, rather, the hopes based on it—is a fallacy. However, I would suggest that such an action would result in better-shaped roots. This vegetable is boiled and served as a separate dish. It keeps well in the store, and is valuable for winter use. There are several kinds, or improvements on the orginal, possessing either early or late qualities. Where water supply is a difficulty, Celeriac will benefit by being grown in a very shallow trench.

Celery for Soups is a plant differing but little from the wild Celery. It sends up a number of tender shoots, which are useful in soups as a seasoning; and, after cutting, these are replaced by fresh growth.

The Celery Fly.—A dredging of very fine soot over the leaves on damp mornings is the very finest remedy for this fly, which pierces the leaves and lays eggs in the tissue. The larvæ eat away the tissue below the surface of the leaf and cause blisters. When first seen, the larvæ or maggots should be crushed between the finger and thumb persistently, or the infested parts of leaves should be removed and burnt. Plenty of water and liquid manure to the roots encourages growth,

and thus treated, plants often throw off the attacks. Soap-suds (not carbolic) scattered over the foliage is also said to be effective.

LEEKS (*Allium porrum*).—This splendid vegetable is not appreciated half as much as it deserves to be, nor is it grown on a fair scale in our gardens; although it is a winter vegetable of utmost utility, requiring but a fair amount of care and labour to produce. It may be described as essentially a trench subject, on account of its affinity for copious supplies of nutritious moisture; yet it can be, and is, grown successfully upon the level ground, providing attention to the provision of water is given. Where the latter essential is difficult to ensure, trench-culture will be found the best plan.

The most difficult point, with most amateurs especially, is raising the young plants. Glass of some sort is necessary to obtain plants in good time, and so is heat. To those who possess both, the only instructions required to be given are that the seed must be sown early in the year, after the manner of Celery, in a fair temperature, and the young plants pricked out, to strengthen, under glass, or on a warm border of rich soil outdoors, where they remain until planting-out time. On the other hand, small but very useful specimens may be obtained by sowing the seed on a sheltered border as soon as the weather becomes warm enough, without the aid of glass or artificial heat. Hand-lights, frames, or pieces of glass may be utilized also.

Large Leeks are obtained by growing them in trenches filled with very rich soil, but extra large specimens are not nearly so useful as those of medium size. In ordinary seasons these will be forthcoming if good plants are dibbled out nine inches to a foot apart, on well-manured ground; but in light soils it will be a decided advantage to plant in shallow trenches, drawn out with the hoe. Leeks revel in plenty of moisture, both at the roots and overhead; therefore in dry weather do not neglect to use the watering-pot pretty freely. As soon as the plants get well hold of the soil, the can should contain liquid manure made from horse or cow manure, which is in itself sufficient to grow Leeks of large size; but growth will be more rapid, if sulphate of ammonia or nitrate of soda, at the rate of half an ounce to a gallon of liquid, is given once a fortnight.

To render Leeks fit for table use, thorough blanching is necessary. This is accomplished by drawing the earth up close to the stems; and therein lies another advantage of trench-culture, which facilitates the operation, whereas those on level

ground become occupants of a ridge of soil, which is somewhat difficult to keep moist in hot weather. The earthing-up should be done gradually, commencing when the plants have attained adult size. Leeks are boiled as a separate vegetable dish, and are also added to stews and soups. They boil to a marrow-like condition, and possess an excellent, mild flavour.

Exhibition specimens will require a very liberal treatment and careful manipulation to bring them up to show standard, most of which will depend on the skill of the cultivator; but I give here a recipe which I have found in a very old book, and which may give good results. I have never had occasion to try it: "To grow large Leeks, take the young plants, clip short their roots, and cut off the top of the leaves about a third of their length. Make holes in the ground with a dibble six inches apart, eight inches between each row, and drop a plant into each hole without filling in the soil, and water at once. Sufficient soil will be carried down by the water to settle around and fix the roots. Water freely during summer, and give them a liberal supply of liquid manure. Hoe occasionally, and shorten the leaves several times. Gradually and by degrees draw soil round them for purposes of blanching."

All varieties have sprung from the common wildling Leek, so beloved of Welshmen, and great strides in improvement were made in the *Musselboro'* and *Broad Flag* kinds; but Mr. Lyon has perpetuated a splendid Leek in *The Lyon*.

CARDOON (*Cynara cardunculus*).—The Cardoon, a European vegetable of great merit, is not grown in English gardens to a large extent; in fact, few gardeners appear to know it or its uses. It is allied to the Artichoke, and ranks with that vegetable as a delicacy. Its appearance is decidedly handsome, with four- to six-foot whitish stems, and large grey-green pinnate leaves, and the whole plant looks like a gigantic specimen of Celery. The blanched stalks and ribs of the inner leaves are used as a winter vegetable, as well as the root, which, like that of Celery, is very thick, and of pleasing flavour. The stalks and root are boiled, carefully, until tender, and served with sauce that is not too highly seasoned.

Cardoon culture resembles that extended to Celery. Seeds may be grown either in March or May. In the first case, heat is necessary to raise the young plants, the seed being sown in pots or upon a hotbed; this procedure being in order to secure an early winter supply. Where early maturity is not essential,

sowings should be made in May or June, in trenches, a few seeds being dropped at three feet intervals, slightly covered with earth and, if possible, shaded until germination takes place. The trenches should be dug out of good soil, in an open situation, two feet wide, and eighteen inches deep. The soil at the bottom of the trench should be deeply dug, at the same time incorporating therewith a thick layer of well-rotted manure. When the seedlings appear, all but the strongest one in each group should be removed, thereafter keeping the trench well watered until September, when growth will be almost completed. Of course, those sown earlier in heat, and planted out, will mature long before September. When commencing to earth the plants up for blanching—which operation should be done on a fine day and when the soil is dry—the leaves should be carefully brought together to an upright position, and tied with pieces of matting. Haybands, matting, or similar material must be provided, one end placed around the base of the plants, and the band wound upwards around the stems until only the tops of the foliage are seen ; thus the plant is fully protected from contact with the soil, which is now drawn carefully towards the stems, first breaking up the ground as finely as possible. The ridge thus formed is beaten with the back of the spade to make it firm. Four to six weeks elapse ere the stalks are blanched. Cardoons will not stand frost. The plants may be lifted and stored in dry cellars amidst sand, or litter may be placed along and over the ridges as a protection. Lifting is to be preferred, however, as the stems are liable to rot in wet weather.

SECTION VI

THE CABBAGE FAMILY

THE group of vegetables coming under the designation of "Cabbages" or "Brassicas" are of the utmost importance, for they comprise some of the most healthful adjuncts of the dinner-table in the vegetable world. What our modern communities would do without "Greenstuffs" is too terrible to contemplate! They are, justly, the most popular vegetables we have, next to Potatoes, probably the most widely grown, and are consumed in ever-increasing quantities. Very few gardens are there in which vegetable culture is attempted that do not contain Greenstuffs in one shape or another. Perhaps the ease of culture, too, has much to do with this fact; for it *is* easy to grow Cabbages—indeed, they grow wild and unfettered along our seashores, with little else but salt sand to provide them with nourishment; thus suggesting at once the ability of the Cabbage to flourish on the poorest of soils. Well, that may be so—if a mass of green leaves, coarse and fibrous, are wanted; but when it comes to the production of choice, compact heads, of good flavour and marrow-like consistency when cooked, there is created ample scope for the careful cultivator. I fail to regard the large Cabbage as a boon, except for the use of poultry or cattle, or to emphasize one's cultural skill upon the exhibition-table. Fair-sized to small specimens, well grown, with solid, white hearts and few outer leaves, provide a delicious vegetable dish when properly cooked; and these are the varieties to be sought after before all others. However, tastes differ; and so do methods of cultivation; and cultivation, of course, is the key to both good and indifferent produce. Besides the numerous varieties and strains of the Cabbage proper, with the Savoy Cabbage, the family includes the Cauliflower, Broccoli, Brussels Sprouts, Kales, Coleworts, Kohl-rabi,

Turnips, etc.; and there are also novelties in the Chinese and Portugal Cabbages—all of which have their peculiarities of culture—small, perhaps, but important—which the gardener will do well to note and act upon. Stable manure is undoubtedly the best to use for Greenstuffs; and this may be supplemented by nitrate of soda in the case of Cabbages, Brussels Sprouts, etc.; while kainit, used jointly with superphosphate, is excellent for Cauliflowers and Broccoli.

CABBAGES (*Brassica oleracea*).—I think the best and most popular type is the "Spring Cabbage." Coming in season at a time when there is quite a dearth of new vegetables, and we are tired of the long-stored, played-out specimens then available, the sweet little "Spring Cabbage" always finds its way into our affections. That Cabbages demand, and well repay, solicitous care and good culture is a good reason why the gardener should put his whole energies into this department of gardening, even to the sacrifice and exclusion of other favourite subjects. Seeds of a good strain, of a kind without a great tendency to run to seed, should be secured and sown very thinly at intervals during July and August, on a bed of fine, rich soil, made moderately compact by gentle pressure after the seed is sown. Every encouragement should be given to the resultant seedlings to make rapid growth with sturdy habit; and this will be secured, first, by seeing that the plants do not suffer from lack of water, and, secondly, by a vigorous thinning-out—the withdrawn seedlings may be replanted elsewhere as surplus stock. The aim must always be to secure what is termed a "stocky" plant; weak, drawn, or defective specimens are to be removed and destroyed, for they are quite useless for any purpose, except to grow as greenstuff for poultry, and it is an utter impossibility for them to negotiate a severe winter.

The young plants ought not to remain too long in the seed-bed. As soon as their size permits, they should be transplanted into a nursery-bed of good, compact soil. While the plants are gaining strength in this second bed, their permanent location may be considered and prepared. The selection of the site is an easy matter, for at the time in question—September–October—there is so much vacant ground that has carried crops—now safely gathered. Soil from which root-crops have just been removed is very suitable, because, for one thing, it is certain to be well dug, and, for another, the manure required for the Cabbages will renovate the top-spit, which will probably

now be quite exhausted, seeing that no manure was applied in the spring on account of its utilization for root-crops. When the surface soil has been thoroughly well manured, and dug, the ground may be considered, with the exception of one thing, to be in a fit condition to receive the young Cabbage plants. This one matter—the consolidation of the soil—affects the success of the whole operation. When the lifting power of frost, the destructive force of strong winds, and the disintegrating effect on the soil of heavy rains are taken into consideration, it becomes apparent that a strong foothold is most imperative to any plant that has to undergo wintry conditions; and the only way to secure this is by planting in ground that has been very much consolidated—for Cabbages, indeed, the earth should be rammed so hard that only an instrument on the lines of a crowbar will make a hole of suitable size for the reception of the roots! The harder the surface is, in fact, the sturdier will the plants become, with short, woody stems that are certain to defy the severest frosts. These are the plants that will delight the gardener early in the following spring, for as soon as a rise of temperature begins to make itself felt, the Cabbages will quickly respond to the congenial influences of a warmer atmosphere acting upon a winter-bound soil, with the result that, very soon, presentable little heads of Cabbage will be ready for the cook. To aid such an event, let the gardener give all the assistance in his power to his plants, by cultivation especially, when the state of the ground permits: opening up the hard soil to the beneficent action of sun and air, by forking between the rows, hoeing around the plants in their immediate vicinity—especially after an occasional light application of nitrate of soda; these, and other little attentions, will be appreciated by the plants, and will be productive of good results.

So far as the generality of Cabbages are concerned, the procedure is not so exacting, although similar, consisting chiefly in sowing seeds of varieties calculated to mature at the period they will be required, allowing plenty of room to each seedling plant, keeping the seed-beds moist, transplanting, and, finally, planting out. One of the most prolific causes of partial or utter failure in Cabbage culture is the use of overgrown or deformed plants, the results of lack of growing space allotted to seedlings; therefore, the beds should be thinned early and drastically, the plants withdrawn therefrom being replanted elsewhere to provide stop-gaps, to replace failures, and perhaps to make a few additional rows. Never throw away a really good plant

if it can be used in any way, but ruthlessly destroy all indifferent specimens.

A profitable way of growing Cabbages is to select a couple of varieties—one that matures slowly, and of large size ; the other small and quick-growing. The larger kind should be finally planted quite three feet apart in the rows, and in the intermediate space one—even two—of the small sort may be planted. The latter, if pushed along by good culture, will be ready for the cook by the time their larger confrères begin to require considerable space for development, and can be removed bodily to afford this additional room. (It is well to point out here that such a system of growth would apply equally well to the early and late sections of Cauliflowers and Broccoli.)

One other profitable item should not be overlooked. When cutting heads of Cabbage, and the ground occupied by the plants not being required for other immediate use, the cut should be made close to the head, so as to leave the stalk and outer leaves intact. Now cut the leaves back to within an inch of the stem, and allow these stumps to remain in the soil. In a week or two, a quantity of young shoots will be observed sprouting from the stem ; these will grow rapidly, and in a short time the gardener will find himself possessed of a fine crop of tender sprouts of most excellent cooking qualities. This system is best practised upon the Cabbages cut in the autumn and early winter ; and the value of successive crops of Greenstuff—(for, mark you, the stems will sprout again a second or third time until exhausted!)—during winter-time and early in the year is incalculable and very important, and really wonderful, considering the humble means by which they are produced !

The variations in Cabbages are very numerous, and widely adapted for all seasons of the year. Generally speaking, as with most vegetables, the small-sized sorts are usually the earliest in growth, sweetest, and most tender, and may be grown close together, thus making up in quantity—and quality—what they lack in size. The large sorts are used for main crops. There are also varieties which will not readily " bolt," and run to seed, and are most suitable for autumn sowing. It may be here remarked that Cabbage seed should not be sown *too* early at the end of summer for standing through the winter, as this is the cause of " bolting."

THE RED CABBAGE is a kind grown principally for pickling.

The culture and general treatment is the same as for the green varieties.

THE SAVOY CABBAGE.—This is a fine hardy, accommodating, wrinkled Cabbage, requiring the usual treatment, and may be grown for successional crops. The smaller and earlier kinds include the "*Gem*" class (nearly all nurserymen have a "Gem"!), whilst the large Savoys are well represented by the *Drumhead* sorts, and *Norwegian* (of medium size and extremely hardy). The Savoy is noted for its beautiful white hearts, and excellent cooking qualities.

COLEWORTS.—Cabbages of a sprouting nature, forming rosettes of leaves, enclosing a heart—each rosette, indeed, a miniature Cabbage. An excellent winter vegetable, to be sown in March, and to be given the usual Cabbage culture.

THE PORTUGAL CABBAGE (COUVE TRONCHUDA) (*Brassica oleracea costata*).—This Cabbage is a very useful and delicate kind, requiring the same treatment as the other Cabbages. It is ready for use from November onwards, and is improved by a little frost. The heart is equal to that of a Cauliflower in tenderness and rich, delicate flavour; and the stalks of the leaves may be used after the manner of Seakale, for which it will be found an excellent substitute.

"PAK-CHOI" and "PE-TSAI" (*Brassica sinensis*).—*Pak-Choi* and *Pe-Tsai* are not characters in a Chinese romance, neither have they any geographical significance; they are simply Celestial Cabbages! But they are none the less interesting to those gardeners on the lookout for new and choice vegetables; and, like most things Chinese, they are quite unlike the English idea of a Cabbage, either in appearance or taste, favouring a Lettuce rather than a Cabbage. But the flavour is unique and extremely delicate, and a great change from our own coarser greenstuff.

Pak-Choi resembles Spinach Beet in growth, and is not unlike it in taste. The green leaves are two feet long and the stalks pure, glistening white, which gives the plant an ornamental value. The whole plant may be boiled as Cabbages usually are, or the stalks may be separated, and sent to the table as Asparagus. This Chinese vegetable is very hardy.

Seeds may be sown either in spring or late summer; but the spring sowing often proves abortive, owing to the habit of quickly running to seed. The best time to sow is the end of July or beginning of August. This ensures an early and mid-winter crop. Sow in moist drills, and thin out the seedlings well.

Pe-Tsai is not nearly so hardy a subject, and seeds must be sown in early autumn and winter. This is really a *salad* Cabbage, as it is eaten raw as well as boiled. In appearance it favours the Cos Lettuce. The heads are, moreover, very compact and firm, and the pale green leaves are prettily crimped and wrinkled. The whole plant makes a good salad ingredient, and when boiled, and seasoned with butter, etc., it is one of the most excellent salad-vegetables it is possible to obtain.

Both Cabbages are of most easy culture, and are very quick growers. Anyone giving them a trial will discover serious rivals to the English Cabbages, Lettuces, or Spinach; for these Eastern plants really combine the characteristics of the three Western vegetables. I notice that Messrs. Ryder, of St. Alban's, offer seeds of *Pe-Tsai*, but I do not know whether seeds can be obtained from any other English firm; they are usually stocked by Parisian seedsmen (the vegetables are used a good deal in Paris), and probably by many other Continental firms also.

CHOU DE BURGHLEY.—A most interesting little vegetable is this cross between a Cabbage and a Broccoli! It first forms a Cabbage head, and subsequently a small "flower" appears therein; its use either in the Cabbage or Broccoli state becomes possible, although the latter is the best. The seeds are sown outdoors in May; or, if an early supply is needed, a sowing under glass in March becomes necessary. This plant is valuable as an early spring vegetable, this resulting from the May sowing; while if an autumn supply is desired the seeds sown in March in warmer quarters will provide it. The culture, otherwise, resembles that given to ordinary Cabbages or Broccoli.

BORECOLE or KALE (*Brassica oleracea acephala*).—Excellent winter vegetables are the Kales, with an ornamental value of high merit attached, which trait has been beautifully developed in late years. There are many varieties, with foliage of many hues and forms. Some of them, if compared with other Cabbages, are rather coarse and indifferently flavoured; but a wise choice of good varieties will provide greens of excellent

quality throughout the winter months. The usual procedure governing the culture of Cabbages is observed. Some useful sorts include the old-fashioned *Ragged Jack* and *Cottagers' Kale*, and *Thousand Headed;* the *Scotch Kales*, the *Hearting Kales; Moss Curled, Drumhead, Asparagus, Buda*, and others; while the *Variegated Kales* have been brought to a pitch of handsome usefulness not generally known and recognized—white, purple, blue, red, yellow, and every shade of green lending their assistance to complete a glorious picture of vegetable decorativeness.

BRUSSELS SPROUTS.—Brussels Sprouts require a long period of growth, good soil, and plenty of room for development. This vegetable is a variety of Cabbage which has acquired an abnormally long stem, covered with compact, crimped, miniature Cabbage heads of fine flavour. These "sprouts" are exceedingly firm, and will prove a very tender and sweet vegetable when properly cooked. There is a tendency to-day toward the production of large sprouts; but there is little that is desirable in this fashion, for a moderately sized "button" is far more compact and of better flavour than a large specimen which has burst open. If large heads can, by good culture, be secured, free from coarseness and a tendency to split, so much the better; but there is considerable risk of failure. The stem terminates in a small but useful head, which can be gathered and used as a separate vegetable.

In order to have a matured crop by October, early seed-sowing must take place—in March at the latest; while later successional crops may be secured by sowings from April to early June. The procedure of seed-sowing and plant-raising coincides with that of Cabbages generally; and a well-drained rich soil, not freshly or highly manured, should be ready for the accommodation of the plants when sufficiently developed, and a distance from plant to plant of from two to three feet allowed. Compact soil is necessary, and the retention of a ball of soil at the roots when transplanting is a decided advantage. Liquid manure during growth may be applied, but caution is to be observed, as over-feeding ruins the plants. A very early batch of sprouts may be obtained by sowing seeds in gentle heat in January, and planting the resulting seedlings in their permanent stations in March or April, first hardening the plants by gradually inuring them to open-air conditions beforehand. In gathering, a sharp knife should be used to cut off the sprouts, for spurs

left upon the stem will probably result in a second crop of sprouts. Frost does not harm Brussels Sprouts.

There are a number of varieties, old and new, with many selected stocks to be recommended to those who wish to exhibit. In the latter case, the degree of success is determined principally by careful, watchful culture, an intelligent conception of the style of exhibit required, and good staging.

CAULIFLOWERS and BROCCOLI (*Brassica oleracea botrytis*). —The " flower " of these plants is simply the result of natural efforts at reproduction—the ultimate formation of seed. The process, however, is a slow one, and requires warm weather to complete it, which fact is really the *raison d'etre* of this class of vegetable. Under the cooler weather conditions, that obtain in spring and early summer, Cauliflowers and Broccoli develop a close, compact head of embryo flowers, very small at first, but steadily increasing, until a good-sized mass of succulent growth is formed. This peculiarity has been taken advantage of by cultivators, who, by continual selection and re-selection, have succeeded in developing this trait of the Cauliflower and the Broccoli to the extent that we now see in the very large heads obtainable in our gardens.

CAULIFLOWERS may be roughly divided into three sections—early, mid-season, and late—each division signifying the approximate period of maturity ; but the deciding factors are the time and manner of seed-sowing and subsequent good growth. The earlier in the year seeds are sown, the better are the chances of an early crop ; and this early sowing brings glass into indispensable use. Boxes are probably the best receptacles for the seed-bed. These should be partly filled with a rich compost, upon which will rest an inch or so of fairly fine sandy soil wherein the seeds are sown—very thinly—and the surface pressed down lightly and compactly. Presuming that the soil has been thoroughly moistened, and a sheet of glass placed over the box, there should be no necessity for further moisture until the seeds have sprouted. The time occupied in germination depends on the temperature of the house or frame, but in any case it is not at all long. There is really very little trouble in raising Cauliflower seeds, which may be sown in frames in the autumn or late spring, and in a heated structure from December to March ; it is in the subsequent development of the seedlings that difficulty and danger of

failure is likely to be experienced. From the time that the first seed-leaves push through the soil the young plants require careful, watchful attention. If kept too far from the glass they will become " drawn " and useless ; if moisture is withheld, or the sun becomes powerful, they will die ; and in an atmosphere of too high a temperature they make rank growth and become too weak for future practical use.

The best procedure is to germinate the seeds in a temperature of about fifty degrees, and allow the plants to remain therein until they are well above the soil and have begun to show the first true leaves. Then the boxes should be transferred to cooler conditions—a " cold " house wherein thirty to forty degrees can be maintained, for instance. Here the plants will make steady, stocky, sturdy growth. When about an inch or so of growth has been attained to, each plant should be potted into a " thimble " or " thumb " pot—and it will be found to be worth the trouble—to grow on. If these small pots become full of roots before planting-out time arrives, a shift into a larger size will greatly benefit the plants.

The foregoing process will appeal to those who desire to produce a *few* really good heads of Cauliflower for home consumption ; where plants on a larger scale are required, transplanting into boxes, or several plants in one large pot, will be more convenient ; but, nevertheless, the fact remains that, if a large Cauliflower of good quality is wanted, nothing tends to produce such an article as " potting-up " surely will. We take this same trouble over our bedding-plants and greenhouse subjects—why not go the full lengths where the more useful vegetable is concerned ?

Again, with an eye to the *few*, in opposition to the many, extra large heads—either for consumption or exhibition—may be obtained by digging for each individual plant a hole about fifteen inches wide and of similar depth, filling three parts of this cavity with a soil composed of such ingredients as well-rotted cow or other manure, leaf-soil, loam, old hot-bed soil—or a rich ordinary garden soil, mixed with cow manure, will give good results. Put each plant—selecting an exceptionally healthy specimen—into the centre of the prepared station. As it grows, good soil may be added and drawn up close to the stems of the Cauliflower, keeping the site well moist and free from weeds. Of course the ground must have been previously deeply dug or trenched. A generally open situation should be selected for Cauliflowers, although the immediate location must

be sheltered from the effects of heavy rains, strong winds, frost, and a scorching sun. Frequent waterings—especially manurial—are essential to good produce; twice a week, at the least, in dry weather. During showery weather, on the other hand, a frequent sprinkling of artificial manure—kainit, for example—in *small* quantities, may be placed upon the soil around the plants and hoed in.

Cauliflower seeds, sown in August—preferably in a frame, or in boxes in the glasshouse—will produce very large heads for cutting early next season. The resultant seedlings must be pricked out as soon as possible into another frame, where they will remain all the winter, to be well protected from frost. It must be borne in mind that all weaklings will surely succumb; therefore, keep the young plants in their baby stage quite close to the glass, and encourage them to grow sturdily and strongly. During the ensuing month of April the Cauliflowers are planted out in a *well-sheltered* situation, quite two feet apart, in a rich, well-dug soil. It will not be long ere satisfactory results in the shape of excellent heads will be forthcoming.

The oldest and best known varieties in the earliest section are the *Early London*, *Early Erfurt*, but as nearly every seedsman has listed a speciality of his own, the gardener must be left to judge whose are the best by trial. The second early sorts include the well-known *Walcheren*, which may be sown several times during the year for successive crops; while the best one of those that mature very much later, and may require protection, is *Veitch's Autumn Giant*, a universally popular and widely-grown Cauliflower, from which most of the advertised late sorts have been derived.

Broccoli.—The divisions into which Broccoli are usually formed are more pronounced in all features of growth than the Cauliflower groups. The latter indicate little more than degrees of maturity, whereas amongst Broccoli there are very distinct and unalterable traits which make each section almost a separate species; at all events, an independent variety. For example, there is a class of Broccoli of which seed sown in the May or June of one year produces plants that require nearly a full year's culture before any attempt at flower-forming is made, coming into maturity during the May or June of the following year. There is nothing alarming, however, in the apparent waste of time and space which have to be devoted to the tedious growth of the slowly-developing varieties: quite the contrary, if

intelligence is exercised in management. These usually produce young plants ready to be put into permanent quarters just about the time when ground becomes vacant here and there by reason of lifting early crops; and a row or two of such plants on these vacant spots give that continuity of cropping which is so desirable and profitable on ground that is kept in good condition—at any rate, where limited space obtains. A light or medium crop therefore—such as first-early Potatoes and other early-maturing vegetables and salads—should *precede* the Broccoli, and a thorough digging and manuring given when these are cleared and before planting of the Broccoli is done. Next season, when the matured Broccoli heads have been gathered, light crops to mature in autumn and early winter may be put on the same ground, after another digging and light manuring, which procedure will enable the soil, after these light crops have carried, to obtain a restful *recuperation all through the following winter*, with, if desirable, further trenching, ridging, and manuring, thus getting the ground ready for the carrying of spring-sown main-crops. In this way the plot devoted to the long-standing Broccoli may be managed so as not to lose what would practically amount to one year's cropping out of two; for it will be seen that the time taken by the Broccoli to develop maturity comprises at least *two* sowing seasons of main-crop subjects—i.e., no *main-crop* seeds can be sown in the spring *preceding* the planting of Broccoli in May or June; the ground is still in occupation of the Broccoli when *next spring's* sowing-time arrives; and the ground must thereafter lie vacant until the advent of the *third spring*. This, I believe, prevents and prohibits the utilization of slow-growing Broccoli in many a garden that could well produce this splendid and "easy" vegetable; and I have tried to show how the difficulty may advantageously and profitably be overcome by the adoption of a judicious system of catch-crops.

There are other varieties which demand the usual "growing" season—spring to autumn—only, and present no difficulty beyond good culture; but, speaking from experience and personal preference, the long-standing Broccoli beats its more amenable brethren in quality.

The divisions of Broccoli comprise (1) those varieties which mature during the months of September to December; the seeds of these (such as *Walcheren*, *Veitch's Self-protecting*) are sown in the previous March and April. (2) The varieties which continue the supply by maturing from January up to the end of

April, and are sown the previous April or May: *Leamington*, *Knight's Protecting*, etc. (3) Those which follow the above by becoming ready to cut in April, May and June, the seeds being sown in April and May the previous year: *Barr's May Queen*, *Cattell's Eclipse*, and many others.

It will be noted that a continuous succession of delicious Broccoli heads may be secured from September to the following July by sowing seeds during the previous March, April and May; for example, seeds sown in the spring of 1917 will produce plants available for use by September, 1917, to the end of that year, right on into 1918, ending in June of that year; at which period the early Cauliflowers will be ready to fill the gap until the autumn months! No gardener, therefore, need be without Cauliflowers or Broccoli at any time of the year!

In addition to the foregoing, there are varieties of Broccoli which produce small heads of flowers in great profusion in the manner of sprouts. These are called Sprouting Broccoli. There are two kinds—Purple and White, with late and early strains. There is no vegetable more welcome, economical or palatable than these Broccoli; their yield is remarkable. Seeds must be sown (out of doors only)—during March and April, and the plants treated like ordinary Cabbages, etc.

KOHL-RABI (*Brassica caula-rapa*).—This is a novelty among the Cabbages, partaking of the double nature of Turnip and Cabbage. The stem above ground swells to a large size, forming a bulb of splendid cooking qualities, and possessing a pleasing flavour midway between the Cabbage and Turnip, or a better description would be a combination of both vegetables. The leaves are used as Greens. Kohl-rabi requires the culture usually extended to the Cabbage Family, and is very accommodating and easy to manage. A good soil should be provided, and the plants kept free from weeds by the use of the hoe. The space between the plants need not be great—from twelve to sixteen inches, according to variety. As a rule, only the smaller kinds are selected for garden use, the larger ones being of more utility for cattle-feeding and of less delicate flavour. These vegetables should be cut before they are fully grown, when, if deeply peeled and boiled carefully, a delicious and appetizing dish of vegetables will be forthcoming. There are two divisions of Kohl-rabi, early and late. *Early Green Erfurt* is one of the best varieties to experiment with.

BLACK ROT OF CABBAGE (*Pseudomonas campestris*).—This disease is of bacterial origin, causing the plant to rot and form a pulpy, fœtid-smelling mass. It attacks Cabbages, Cauliflowers, Brussels Sprouts, Turnips, and other members of the Cabbage Family. The lower leaves are affected first, and is confined to the veins, whence the disease passes into the leaf stalk, thence into the stem and into the stalks of other leaves, and in a short time every leaf is infected, which become dark brown or black, and the whole plant collapses. Affected plants should be removed and burned, and must not be thrown on the rubbish heap, otherwise the disease may be transferred to the land again. Seed may be disinfected before sowing by soaking it for a quarter of an hour in a solution of one part of corrosive sublimate in 1,000 parts of water, or in a solution of formalin, one ounce in about two gallons of water.

TURNIPS (*Brassica napus*).—The Turnip needs no description. It has been in cultivation from a very early period, and there are numerous forms, shapes, and colours to be found amongst its varieties, and sorts suitable for sowing at all portions of the year are to be obtained. Only good ground, well-manured and prepared, will grow Turnips to perfection—tender, sweet, and of good shape and size; and a good variety chosen from the class likely to prove amenable to the soil available is another source of successful cropping. At the same time, a soil too rich in decayed vegetable matter or fresh manure will tend to the production of coarse, badly-flavoured roots. The ideal soil is a fairly rich, friable, sandy loam. Stiff, cold, retentive soils are most difficult to deal with, and if a fine, rich, friable surface is not created for the seed-bed, the results are certain to be poor. Given a fair start, and a favourable growing season, Turnips will often give a good account of themselves on indifferent soils. A genial site for a row of Turnips in the summer months is between two rows of tall Peas, Climbing French Beans, Broad Beans, or other vegetables that provide shade; such a place will conserve moisture and protection from hot sunshine so necessary to the Turnip.

Turnips are really best treated as catch-crops—to be sown and grown during the interval separating one main crop from another; and several successive batches may be secured during the year. If seeds are sown early—say February or March, and again in April and May, or June—a supply will be obtained all the summer and early autumn; whilst a sowing made in

July, and another in August, will provide a sufficiency for winter and spring use.

The variety for early and successional use is undoubtedly the well-known "Six-weeks" type of Turnip—*Early Snowball, Early White, Early Green-top, Early Milan, Early Munich,* etc.—which will provide small, well-shaped, crisp and sweet roots of mild flavour and excellent cooking qualities. These varieties, be it remembered, must be grown quickly, and not retarded in any way, to secure satisfactory results. *Orange Jelly, Golden Ball,* and other yellow-fleshed kinds are the most useful for midsummer sowings; whilst *Chirk Castle, Green-top Stone,* and *Red-top Stone* are best for later sowing. Those gardeners possessing a deep soil should try the tap-rooted varieties of Turnip, which are both novel and excellent; *Jersey Navet* and *Long White Horn* are the two best of this kind.

Points to remember concerning Turnip culture are: (1) A moist, friable seed-bed, with drills containing burnt rubbish, ashes, soot, guano, bone-meal, or superphosphate—a light sprinkling of one of the last three will be sufficient; (2) a shady spot in summer, and open, rich ground in winter; (3) quick growth, aided by cultivation with the hoe; and (4) severe thinning out of seedlings. Superphosphate is the very best artificial manure, and light dustings of this may be given occasionally with good results.

Turnip "tops" are the sprouts from old roots left in the ground, which start into growth in early spring, and the young tops—the thinnings of seed-beds—may be used for the same purpose; besides which the shoots may be blanched in damp heat, and eaten as a substitute for Asparagus.

The Turnip-flea is probably the worst pest that troubles this vegetable, and applications of lime or soot may be given to prevent its attacks; and if all weeds of the Cabbage Family (such as Charlock) are carefully eliminated from the neighbourhood of the Turnips, much good will accrue, for they are usually the objects of attack by the same insect pests that prey upon the Turnips, and their removal constitutes a safeguard.

Swedish Turnips.—These vegetables are really Turnip-rooted Cabbages, and differ considerably from the true Turnip—the latter deriving its origin from the Rape. "Swedes," as they are termed, are of much better flavour than the Turnip proper. Those usually grown in gardens possess yellow flesh, which becomes marrow-like and of sweet flavour when boiled.

They are best used just before they are fully grown. All the varieties like a stiff, moist soil, such as a clayey loam, and grow best in moist districts, although they accommodate themselves to drier situations. Seeds are sown in May and June, in drills, and the seedlings are thinned out to quite a foot apart. No other attention is necessary after this, except the use of the hoe, and applications of water and liquid manure during hot weather, from which Swedes greatly suffer. A rich soil should be allotted to these fine Turnips, as they pay for good culture. Those roots that are not required for immediate consumption should be lifted and stored; but the plants are extremely hardy, and frost does not affect them during growth.

One of the finest attributes of these Turnips is portrayed when the bulb is perhaps in its worst condition—when it begins to sprout afresh in the clamp or store; for these sprouts form one of the most delicious vegetables that can be desired. To secure an occasional supply during winter and spring, a few roots should be selected—especially those showing signs of sprouting—placed in a warm, moist situation, and covered with sand, ashes, etc. Suitable places for these are near the hot-water pipes of a glasshouse, under the greenhouse stage.

SECTION VII

THE ONION TRIBE

ONIONS (*Allium cepa*).—The Onion speaks for itself! Its aggressiveness is often both painful and objectionable—to all but the consumer! Hence a mighty prejudice is observable in many quarters against this most healthfully cleansing of all vegetables. While patent reasons for objection undoubtedly exist, injustice falls to the lot of the Onion, for it is robbed of its rightful place in the forefront of the vegetable world, and its beneficent operations are slighted, underrated, and refused full recognition. Yet the fact remains, despite contumely and contempt, that the Onion is indispensable; its value inestimable, in culinary, sanitary, and medicinal uses. Besides, its palatable attributes are great, for many a savoury dish or richly-flavoured, appetizing concoction would cease to justify that description were the Onion—probably cleverly and artfully hidden or disguised!—eliminated therefrom. On this latter score alone, there is ample basis for the argument that the Onion—in some shape or form—should be well represented—even given the lion's share, perhaps—in *every* garden, large or small.

"Can I grow Onions in my garden?" has been the query put to me on various occasions; and in every case the answer, accompanied by obviously necessary explanation, has been, "*Yes*, and *No*"! This contradictory response is set right by pointing out that one favourite way of producing Onions in difficult situations is to procure or save all those Onions which show signs of decay and particularly a tendency to sprout; these, planted in any moist spot at almost any time of year will strike root, begin to grow, and in a very short time ultimately form several divisions apiece, about the size of the average "Spring Onion" so popular during the salad season. These facts enable me to say emphatically "Yes" to the query

I have mentioned, even where conditions appear to be prohibitive and hopeless; and yet again there is the sowing of seed to produce salad or "Spring" Onions, which may be practised in otherwise unfavourable circumstances. In fact, the growing of immature salad Onions is of the easiest description, and may be confidently undertaken by the most adversely-circumstanced gardener, provided he bestows attention upon the maintenance of a congenial soil (a loose, moist medium is the best for this purpose) in which the plants may make quick progress—an essential to the creation of mild and tender qualities. One may say, too, that the method of planting old sprouting Onions cannot be surpassed in the effort to produce a mild and succulent salad or flavouring Onion, the resultant "scallions," as the divisions are called, being all that could be desired in this direction. The sets may be planted anywhere, close together, and should be kept well moist; while seeds of the salad varieties —*White Lisbon*, *White Spanish*, etc.—may be sown fairly thickly between rows of long-standing vegetables, and can be gathered for use from the time they attain three or four inches in height. Both methods produce usable specimens in a month or six weeks under the most favourable conditions, and in any case the period of waiting for results is very short. Taking these facts into consideration, the question is evolved: Why are not salad Onions grown in *every* garden; or at least to many times the extent of the usual practice?

But there is the more serious and exacting side to Onion culture—the production of sound, useful bulbs for household purposes; and it is to this side of the question that the answer "No" often emphatically applies.

First of all, a modification occurs in the case of the small pickling Onion. These can be grown on the poorest of soil, and as size is not a consideration, seed may be thickly sown, and the resulting plants left much to themselves, beyond an occasional weeding.

Where a really first-class Onion for culinary or other household purposes is required, however, strenuous cultivation is decidedly imperative. This style of Onion does not necessarily imply great dimensions. I fail to see the domestic utility of an enormous bulb, which cannot possibly be all used at the one cooking operation, and is, moreover, of a flabby constitution. A large Onion is excellent for show purposes, but very inconvenient to the cook. It is preferable, therefore, to aim at a reasonable size combined with sound keeping qualities and

tender flesh that will yield good results in cookery. I am informed by many people that the average Spanish Onion, so familiar to all, may be regarded as a good example of the requirements of the kitchen—specimens, for instance, scaling three or four to the pound. If growers will aim at, and obtain, a crop of Onions ranging around this standard size and quality, there should result every satisfaction; only the desire for sensationalism would demand anything further. Indeed, the production of such Onions is no small undertaking! And we will proceed to discuss ways and means of doing so. The first great essential of the Onion is a well-worked, rich, *very* deep soil in which to send its long roots; and it is astonishing *how* long these roots are, and how far down they penetrate. And, moreover, the deeper the soil, the greater will certainly be the depth of penetration.

It will be noticed that Onions are partial to a firm soil; that is true; but a firmness that destroys or prohibits liberty of action of both roots and atmosphere and the rapid filtration of water is disastrous, and should be guarded against by an intelligent study and appreciation of the true definition of a "firm" soil. One may put it as a direct opposite to a loose, crumbling, dry medium—a soil which retains little moisture, and offers no substantial support to a vigorous, root-action; a soil composed principally of sand particles, or almost pure chalk, or extremely dusty in dry weather. This is a soil unsuited to Onion-growing, if left to itself; but it can be used beneficially by means of the consolidation of these loose elements. And this, let it be noted, is not accomplished by merely treading or pressing the surface of the soil into an evenly smooth condition; the whole soil requires mechanical consolidation by the application of manure and retentive materials, which is completed by the pressure upon the surface from above. Many people make this mistake, and fail to secure compactness in the lighter kind of soils, with the result that, should the top inch of soil be disturbed by weeding or hoeing, it is found that the Onion plants have a very poor loosely-lying under-soil to root in, and are readily pulled from the ground; whereas, in a more favourable soil it is a difficult matter to remove bodily an established Onion plant without breakage. Consolidate light soils, then, through and through. That is a safe maxim in Onion culture. Heavy soils, on the contrary, must receive less drastic treatment, for they are already compact; even some of the medium soils need not be too forcibly compressed. I

point out these facts because there is so much danger in the general advice one constantly sees concerning the preparation of the Onion-bed—to "make the soil compact by treading or beating down with a spade or board," etc. That is not applicable, or effective, in *all* cases. A passing note may be made of the fact that there is considerable difference between consolidating the bulk of the earth and pressing the soil gently upon newly-sown seeds, or making the surface firm and level for the reception of transplanted seedlings. The latter two are matters concerning the state of the *surface* of the ground at the time of the operations, and are referred to under the heading of "Seed-sowing" (see pages 21-23).

It will be seen, then, that the combination of a deeply-dug yet compact soil is essential to the production of good Onions. The thorough winter preparation of the Onion site by trenching, ridging, or, at least, deep digging, effectually guards against the adverse effects that might accrue from over-consolidation of the ground; for once the particles of soil are thoroughly separated, they are likely to remain so for some time, on account of the admitted presence of air and water, even under pressure from above. (This can be readily proved by turning up a light subsoil, the surface of which has been trodden down quite hard and dry.) When this combination has been effected, it only remains to bring the surface into a reasonable condition (see page 22) to create an ideal Onion-bed.

The seeds are sown, preferably in drills, one inch deep. A deeper drill, to be partly filled with a compost as advised on page 23, will prove useful on heavy soils. Fairly thick sowing may be indulged in, as all thinnings may be either used in salads or transplanted elsewhere.

Spring Sowing.—This is carried out early in February, and once or even twice afterwards during that month and March. Small beds of several kinds may be tried, if desired. The young seedling plants must be kept quite free from weeds, and immediately they are large enough thinning should be performed, choosing the weaker plants to be removed; the distance from plant to plant may be from four to twelve inches, according to the size the bulbs are required to attain.

The seeds of such varieties as *Ailsa Craig* and *Cranston's Excelsior* may be sown in January in heat under glass, pricked out into boxes and kept close to the glass until April, when they are planted out one foot apart. Very large bulbs are obtained by this means.

Autumn Sowing.—Many advantages are to be derived from the sowing of Onion seeds in the autumn instead of waiting until spring. In the latter period of the year weather and soil conditions are not always of the best calibre, sometimes delaying the committal of seeds to the ground to an extent that prejudices the reasonable development of the crop. Greater size, better flavour, a more abundant and heavier crop, and the welcome provision of a large supply of "Spring" Onions all through the winter months are the chief advantages of this process; while it is a well-attested fact that the maggot—a dangerous pest indeed—never attacks autumn-sown produce. The principles governing the autumn work are chiefly found in proper and careful sowing, at the right time, so that the plants may be of sufficiently adult stature to be able to withstand the devastating effects of frost; therefore, the plants of this section require a site thoroughly prepared to this end. The seeds, if sown at the right time and under good conditions, will produce sturdy subjects for negotiating all contingencies. Sow any time from the middle of July to the second week in September in moderately rich and well-pulverized soil, in an open situation; two or three sowings at intervals of ten or fourteen days is the safest way to combat any vagaries in the weather and other causes of failure. Consolidate and level the ground, keeping the bed free from weeds and of uniform moisture, and use the hoe whenever the surface of the soil appears to need cultivation, or if the young plants do not progress. There are two methods of culture, either of which may be adopted as circumstances permit. The first is to sow fairly thickly, and as soon as the plants are of useful size, thin out to six inches apart in the rows; these, under the process of good cultivation—especially as the spring approaches—will provide excellent bulbs of great size and good quality. But by far the best procedure is that of transplanting. For this purpose, seeds should be sown very thinly, so as to allow perfect freedom of growing space for each individual plant—all those that would hinder in this direction being removed early. The remaining plants will stay where they are, with due and proper attention as to weeding, etc., all the winter through. In spring, when outdoor conditions are favourable, the plants may be carefully lifted—without breaking roots and with soil attached, if possible—and transplanted at least six inches apart in rows in a bed of soil prepared as advised hitherto for Onions. Transplantation will give the best of results, and is especially to be

recommended, even with the thinnings of the spring sowings, which should never be wasted if not wanted for salads. *Ailsa Craig*, *Cranston's Excelsior*, *Trebons*, and the *Tripoli* varieties are suited to autumn work.

Onions, being what are termed "gross feeders," can accommodate almost any amount of strong organic manures, of any kind. Whatever may be available in this respect should be well incorporated with the soil, from the surface downwards to at least two feet—even deeper, if possible. The soil can hardly be too rich, especially if plenty of soot, wood-ashes, lime, and burnt vegetable refuse is mixed with it, and the ground broken up and exposed to the weather in the winter. Kainit and superphosphate may be dug into the soil before sowing the seeds with good results. During growth, at intervals, soot-water may be applied—copiously if the weather is dry—assisted by the vigorous after-use of the hoe upon the soil. Sea-sand, also, may be used with good effect upon heavy soils.

The richness of soil, however, constitutes the chief danger to Onions, for it encourages attacks by the much-dreaded maggot, which is usually the result of the application of crude manures. This pest may be disposed of by the application of fresh slaked lime to the ground and on the seedlings during the thinning process—sprinkled thinly, and repeated if necessary. Another serious cause of trouble is drought. This must be combated by frequent waterings, with both clear and weak manure liquid, and a mulch between the rows. Never allow the bulbs to be covered in any way, by soil or mulching materials.

Many people seem to think that, in order to induce bulb formation, top-growth especially must be discouraged. This is a mistake. Growth above ground and vigorous, free root-action are the only means of bringing about perfection in the bulb; hence the emphasis upon the provision of a suitable soil. This will be more readily understood by noting that the bulb is a reservoir of nourishment—an accumulation of food reserve, to sustain the plant in its future labour of seed-production. This latter is always a great strain upon the constitution of plants, and, coming at a time when a plant like the Onion has almost reached the end of its activities, and has probably exhausted the soil in which it is growing, such a reserve of nutriment contained in the bulb is very valuable; the larger the store, the greater the seed-production. To secure this reserve, then, the Onion extracts from both the aboveground and underground atmospheres all the available food; and the

more healthy the top-growth and the more vigorous the root-action, the greater certainty is there of a large collection of nutriment, with the consequent enlargement of the bulb.

But there comes a point in this procedure in which the Onion will seriously turn its attention to the great object of its existence —the production of seed for perpetuation; and unless this be stopped, the bulb will be spoilt, for all the store of richness therein is commandeered for reproduction purposes. This sudden perversion of food elements must be checked *from above—not* below. This is usually accomplished by bending over (not breaking!) the Onion stem about two inches from the bulb towards the ground. But let there be no indiscriminate action; this drastic procedure should never be carried out where signs of running to seed are *not* apparent. Retain all foliage as long as possible—that applies always and everywhere in plant-life. Premature destruction of the growth of foliage invariably induces the bulb to stop growing, and to consolidate and ripen instead.

Root-action, however, should *never* be checked or neglected at any time, and certainly not during that period when the bulb is drastically deprived of the support afforded by its foliage.

When the necks of the Onions begin to shrink and the root-hold upon the ground is loosened, the bulbs have reached maturity, and all showing these signs may be removed from the bed, leaving the others to complete their growth; for if the ripe ones are allowed to remain in the ground, they may commence fresh growth, certainly if rain intervenes, and be irremediably spoilt. They are, after removal, spread out in the sun to dry, turned frequently, and taken under shelter at nights. When both foliage and roots have completely withered, the bulbs are ready for storage in a dry place. Care must be taken not to bruise the bulbs in any way, removing all soil, and any part that would tend to decay. They should be disposed thinly in the store, or hung in ropes or bunches, and carefully looked over occasionally to remove any affected ones. To preserve a number for very late use, a hot iron may be used to cauterize the roots and necks, care being taken not to burn the bulb.

The maggot is the Onion's chief enemy, so far as insects are concerned. This is very prevalent in light soils. The Onions, when young, begin to turn yellow, as the first sign of the presence of the maggots, the foliage droops, and the plant soon dies, or becomes worthless. Trenching, autumn sowing, and the

application of soot and lime are preventives, and the very careful sprinkling of gas-lime between the rows of Onions left in the ground for seeding will serve the same purpose, as will the destruction of all decaying bulbs.

Onion variations are very numerous indeed. They may, for a guide, be divided, first, into those suited to spring or autumn sowing; and second, globe-shaped, flat-shaped, red, Tripoli, and silver-skinned Onions. The latter classification principally affects personal taste or fancy; but the first division is most important to the general cultivation of the Onion.

ONION "SETS."—These are small bulbs, about the size of a marble. They are reared from seed of the White Spanish variety, sown about the second week in May in a poor, dry soil. In the event of dry weather prevailing at the time of sowing, give a good watering to promote speedy germination, but afterwards let the seedlings grow as they please until the tiny bulbs are ripe, then lift, dry, and store in paper bags till spring. In February plant the bulbs six inches apart, slightly pressing the bulbs into the soil. For this purpose the soil must be rich and prepared as for ordinary Onions. The bulbs will then develop into exceptionally large ones by August.

TREE, EGYPTIAN, or CANADIAN ONION (*Allium proliferum*).—A species of Onion which does not possess a bulbous root is a novelty. The Tree Onions produce numerous bulbs on the stems, and these bulbs may be gathered, dried in a shady place, and will keep for a long time if perfectly free from moisture. They are mild in flavour and useful for pickling. The bulbous offsets produced from the roots are planted either in March and April, or September and October, but the bulbs themselves are best planted in April; and the old roots replanted will also provide a crop of bulbs. It will be thus seen what a useful plant the Tree Onion is! Plant in rows six inches apart, in holes two inches deep and six inches asunder. Autumn-planted sets will start into growth the following spring, and will be ready with a crop of bulbs in June and July. Spring-planted bulbs appear later in vegetation, and mature their produce in July and August. The bulbs must not be taken up until perfectly ripe and the stalks are withered, and in dry weather. The roots, if required for replanting, may be taken up and divided, or they may be left undisturbed for three seasons; after this it is best to lift and divide the clumps, otherwise the produce

deteriorates. The best plan of all is to make fresh plantations yearly by means of the root offsets.

POTATO or UNDERGROUND ONION.—These form a species of Onion which, planted in the same manner as Shallots, produce a number of new bulbs each season. The culture is of the simplest nature, the results most profitable and extremely useful where mild Onions are in demand, and it is strange that one sees so few of these excellent members of the Onion tribe in gardens. They ought to be universally grown, especially in small gardens.

THE SHALLOT (ESCHALOT) (*Allium ascalonicum*).—Shallots demand a culture that a child of tender age could afford with success, it is so simple! A raised bed of fine, dry soil, into which is worked any charred or burnt refuse, wood-ashes, soot, flue-dust, etc., is all that is required, to start with. The bulbs are planted singly, just pressed into the soft earth, and then covered with ashes of any kind. After a short time, the bulbs will root and become firm in the soil, when the ashes may be removed, and the ground stirred gently between the rows, eliminating all weeds. That is the only culture Shallots require. They may be planted either in October or February, as circumstances permit, about six inches apart, in rows at intervals of nine inches. In July they are ripe, and should be taken up, dried in the shade, and stored. These plants are very ornamental, providing elegant tufts of green leaves long before vegetation generally begins to make a show, and prove capital subjects for edgings to beds of less attractive subjects. Their use in cookery is of high degree, they possessing an excellent mild flavour; and they also make a splendid pickle.

GARLIC (*Allium sativum*).—This is an extremely odorous member of the Onion Family, much used on the Continent, and forming a prominent ingredient in many a dish. In these isles its use is mainly confined to flavouring purposes, in pickles, chutney, and similar preparations. The culture is precisely the same as that advised for Shallots; but they must not be planted too early—say, in February—being not so hardy as Shallots. A light, rich soil suits this bulb. It is usually propagated by parting the roots, but the bulbs produced on the stems may also be used for planting. If any sign of running to seed is noted, tie the foliage in knots to prevent this

development. In August dry the ripened bulbs well, and retain part of the stalk, by which they may be suspended in bundles until wanted for use.

CHIVES (*Allium schænoprasum*).—A splendid and most efficient substitute for "Spring" Onions is the Chive, or Cive, of Siberian origin, and of most easy growth. A light, rich, moist soil is most suited to these plants, and a couple of rows across a four-foot garden-bed will supply enough salad onions for a large number of persons, for a considerable length of time, for, soon after they are cut, the green leaves are succeeded by fresh shoots. Small bulbs are formed, which are planted in March and April, about eight inches apart. The leaves, when gathered, must be cut close to the ground, to encourage the production of a fresh supply; and in autumn the bulbs, if thought desirable, may be lifted and stored, to be used after the manner of ordinary Onions. Seed, of course, may also be sown, or growing clumps purchased. As a perennial edging to the kitchen-garden they are unsurpassed.

LEEKS are treated in the section in which their peculiar cultural necessities demand a place—that devoted to vegetable-growing in trenches (pages 67 and 68).

THE STORAGE OF ONIONS, SHALLOTS, AND GARLIC.—The bulbs are placed in a single layer on the floor of an airy loft, on open lath shelves, or in portable trays, in a shed or spare room. Darkness is not an essential. One of the best ways of storing Onions, Shallots, and Garlic is to rope the bulbs. The Onions must be carefully harvested, the tops being perfectly dry. A piece of rope about three feet long is procured, and a knot tied at one end and fixed to a nail. The rope is then split into three strands. An Onion is laid along each string, the bulb towards the knot, and the three plaited together, the tops of the Onions going with their respective strings. This process is repeated until a rope of Onions about two feet long is made. The three strands are then tied together at the end, and the whole rope and the Onion-tops tied with string as close as possible to the last bulb. Thus a loop will be left by which to hang them. The presence of the rope prevents the string of Onions from breaking, and the bulbs can easily be detached as required for use without disturbing the remainder.

SECTION VIII

THE VEGETABLE-FRUITS

I HAVE placed several subjects in this section which answer to the description of a vegetable-fruit, not that there is any relationship or similarity between them from a botanical point of view, but because, first of all, every one of them require heat and glass protection of some sort in their initial stages of growth; secondly, much care is demanded on the part of the cultivator in every phase of growth, mistakes or mismanagement being rewarded by complete failure; and thirdly, because they are delicate subjects, both from a cultural and culinary point of view, which will not accommodate themselves to the rough-and-ready treatment that may with a measure of impunity be given to most vegetables. No kitchen-garden, however, can be considered complete without at least one of them. Glass is indispensable where early and well-ripened fruits are desired; and some of the subjects should be given a place in a glass structure during the whole course of their existence. So far as raising the seedlings is concerned, although heat is necessary as that operation is carried out so early in the year, yet the means of providing heat need not be elaborate—a propagating-box with a small lamp under; a frame upon a slight hotbed; a heap of manure litter and leaves, into which pots or boxes containing the seeds can be plunged, this being surmounted by a larger box or framework covered with a piece or pieces of glass; or the greenhouse proper—these can all be utilized with profit and success. The satisfactory development of the subsequent growth and production of fruit depends upon the skill and perseverance of the cultivator.

THE TOMATO (*Solanum lycopersicum*).—This popular vegetable-fruit is now an important addition to the common food-supply of Britain, and an increasing quantity is grown each year

to cope with the demand. A well-grown, freshly-cut Tomato, straight from the vine, is a luxury, and that is why so many people strive to grow Tomatoes under circumstances far from favourable. To grow Tomato-plants, and to produce the green fruits, is, on the whole, an easy matter, both outdoors and in the glasshouse; but to ripen the fruits in the absence of sunshine is not a light task. The best means of securing a good percentage of ripe fruits, both under glass and out of doors are the raising of an early batch of young plants; rapid, sturdy growth; and early fruit-setting; these things, indeed, being the essentials governing Tomato culture. Even under glass, late-raised plants are almost failures in a dull summer; whilst an early planting outdoors in a warm border, and training to a wall which receives the maximum of sunshine, will give fair results even in indifferent weather.

The attention of the would-be Tomato-grower should therefore be directed to the raising of plants very early in the year under glass. The seeds should be sown thinly in five- or six-inch pots, in pans, or in boxes. To accelerate germination, the pots may be plunged in a brisk bottom heat, and the pots or pans covered with squares of glass. The glass is not indispensable, but it hastens germination and secures uniform moisture. The glass must be removed as soon as the seedlings appear through the soil, and when they are well above the surface the pots or pans should be transferred to a shelf near the glass, aiming at all stages of growth to keep the plants as sturdy as possible. Thin out the seedlings if they are at all crowded, but this ought to be avoided by sowing seeds thinly. Water them only when they are dry, yet before the foliage flags, though a little limpness will not do any harm, always using water of the same temperature as the house. If the soil is of too close a nature, or water too freely given at any time, however, the stems and roots will rot. When the plants have developed a pair of leaves other than the seed leaves, pot them singly into three-inch pots. Employ clean, lightly-drained pots, and soil of the same temperature as the house, consisting of two parts of fibrous loam broken up moderately fine, and one part of thoroughly decomposed sifted manure. As the plants are rather tender, the potting should be performed in the structure in which they are growing.

First carefully shake out the seedlings and select the strongest. Put a little of the roughest soil over the one crock placed in each pot, then finer soil, leaving sufficient space for the roots

and stem below the seed leaves. Place the single plant in the centre, fill in gently with soil up to the seed leaves, and press the soil down very carefully, taking pains not to bruise the root stem. Give the bottom of the pot a sharp tap upon the bench when all is finished. The newly-potted plants should be kept somewhat close, and shaded from bright sunshine for a few days. When they are established, return them without delay to shelves as near the glass as consistent with allowance for growth. Do not allow them to become dry at the roots, but avoid keeping the soil constantly saturated. A good plan, where constant attention is a difficulty, is to plunge the pots into a box filled with cocoa fibre, or leaf-mould, which should be made moist. This will keep the pots and their occupants in equable moisture. Allow sufficient room for growth, crowding being fatal.

GLASSHOUSE CULTURE.—It is of the greatest importance to obtain strong, sturdy plants to start with, and have these well established in the fruiting-pots by the time the first fruits are set. The plants are sometimes transferred from the three-inch to the fruiting-pots, eleven- or twelve-inch, the potting being such that about a quarter of the depth is left for top-dressings of compost; but it is better to shift the plants from the three-inch into six-inch pots, and from this size to pot them finally into twelve-inch pots, when the first trusses are forming. Each time they are potted on the plant should be placed lower in the pot, in order gradually to cover up the stem so far as an inch below the first pair of leaves. This part of the stem is most valuable to the plant; for from it will start a mass of surface roots, on the strength of which the crop will depend for nourishment. In dealing with young plants which have been neglected in this particular, place them almost horizontally in the box at the last planting, and cover up the stem to the first foliage. The plant will assume an upright attitude in a few days. It may be necessary to fertilize the early flowers with a camel's-hair brush, under glass. Boxes, one foot by two feet, are in many cases to be preferred to pots, because they give so much more room for cultivating a broad mass of surface roots. Room should be allowed for repeated top-dressings of old hotbed material, to which may be added lime, soot, or a chemical fertilizer in small quantities when the plant is swelling its fruits. More water may be given when this happens, and then clear soot-water occasionally. Pinching and pruning must be attended to regularly; removing as soon as it appears each leafy shoot on the stem, but preserving the

alternate one which shows a bunch of fruit. One or two stems only should be kept on each plant, the second starting from the base when the first is two feet high, so as to take its place when it becomes bare of fruit. The plants need a stake each, about four feet in length, and to this the stems must be secured, always leaving sufficient room in the ligatures for aftergrowth. When established, the plants require copious supplies of water; but it is advisable to err, if at all, on the dry rather than the wet side, though a deficiency of moisture at the roots when the fruit is forming will be the cause of trouble in the way of deformed, small fruit, and lead to premature ripening, and hard, seedy fruits instead of tender, fleshy specimens. In no case must crowding be allowed, or the house kept close and saturated with moisture. A temperature of fifty-five to sixty degrees at night, sixty to sixty-five degrees by day, with ten to fifteen degrees rise from sun heat, is suitable, a little air being given at sixty-five degrees, and increasing it with the advancing heat so as to have the ventilation free, between seventy and seventy-five degrees.

TOMATOES FROM CUTTINGS.—The perpetuation of Tomato plants from cuttings is chiefly recommended because they are considered to begin bearing earlier than seedlings, and they are sometimes less vigorous, which is an advantage in a limited space. This system is an excellent one by which to raise plants for winter fruiting. The cuttings are struck in August, in small, single pots, grown on, and shifted into larger pots as they become necessary until a ten- or twelve-inch size is reached. The plants are grown with single stems, being pinched after each bunch of fruit shows by taking off the extreme point. New feeders then speedily form, and additional fruits appear at their first joints, ensuring productiveness at an early stage. Cuttings struck at the beginning of October supply the early crop in the spring, and are more desirable, as winter-fruiting is not always satisfactory. Cuttings root readily if kept close in a heated house, and after they are struck should be gradually inured to the air of the house, and placed on shelves near the glass in an airy position. The night temperature that is necessary during the winter is from fifty-five to sixty degrees, whilst in the daytime a rise of five degrees suffices. Careful management is most essential to success.

TOMATOES FOR SPRING CUTTING.—For this purpose, the plants may be grown in a frame, which should stand in the full sunshine. The plants will have been raised previously in heat, and be

sufficiently grown to be placed in the frame, planted in boxes, in April; and if set with their first fruit, they will soon take to their new quarters. A hotbed is not necessary. The boxes should be placed at the lower part of the frame, and half-buried in soil mixed with half-decayed leaves—this affording slight warmth without impure exhalations. Plenty of air must be given in the daytime, and the frame should be kept slightly open at night, unless sharp frost sets in, when the frame must be covered with mats until the morning. As the season progresses, give the Tomatoes more air night and day, and train the stems below the glass on wire netting, or on canes fixed across the frame, to keep them from lying on the ground. Tomatoes grown in this way can be made to ripen fruit early in the season, and late in the year.

Open-air Culture.—This is possible in nearly every garden, even if it only results in a crop of green fruit, for these will make an excellent pickle, and also may be ripened by exposure to sunshine after they are gathered. One point towards success is the provision of *early*, well-grown plants, which, moreover, should be thoroughly hardened off before being planted out. The earlier the latter can be accomplished, the greater the chances are of fruit ripening. Protections can always be provided from frosts and cold winds. A great mistake is often made in giving the plants strong doses of liquid manure before a single fruit is set, the result being a rank growth, which is very pleasing to the eye, but the grower finds little satisfaction in the crop of fruit these plants reward him with. Tomatoes like a very firm soil; therefore plants should have the soil for two feet around them trodden as firmly as possible. In this connexion, it may be pointed out that an old cinder-path, broken up and manured, makes an excellent medium for Tomatoes. Where plants are growing against walls, and are supported by wires, make a point of examining the latter every few days, many of the ties probably not allowing for expansion. Do not attempt to produce a record crop by running up several leaders. This plan answers very well if it is desired to cover a bare wall in a short time, but it will not produce a profitable crop. It is a decided advantage to grow but one leader to each plant, removing all side shoots as soon as they show. Trusses of flowers showing a leaf at the extremity should have this leaf removed at once. Feeding with soot-water for the first fortnight induces a strong, yet not too rank, growth; and heavy crops on outdoor plants may be obtained by the use of this alone. Avoid a too

drastic removal of foliage. If some of the leaves are too large, and make too much shade, cut *half* the leaf away. Should the month of August pass without ripe fruit being gathered, it will be advisable to pinch out the leader at a couple of leaves beyond the last bunch of fruit. It is only in exceptionally favourable seasons that fruit results from flowers opening after August.

Varieties of the Tomato are legion, and are continually being added to. I will mention those with well-established reputations. They include, for indoor work: *Early Ruby, Earliest of All, Holmes' Supreme, Sutton's Perfection, Frogmore Selected, Kondine Red, Favourite, Tresco,* etc. (The last-named is a very prolific variety of recent introduction; but, in my opinion, it illustrates one of those instances of over-strain in the effort to produce extraordinary results in cropping or size, for I have found that the *Tresco,* although growing enormously and quickly, and forming bunches of blossom as large as a man's head, not one-half of these will set fruits. The plants therefore take up extra room and nourishment without giving additional produce. My experience is backed by that of several acquaintances who have tried the *Tresco.* We may have been unfortunate in lack of sunshine during the seasons under our observation; yet I think the *Tresco* Tomato has too great a burden to bear.) Outdoor sorts may be safely said to include many of those usually grown under glass; it is merely a question of situation, prevailing weather, and good culture. *Holmes' Open Air* and a few others are suitable sorts.

The Yellow Tomato should receive better attention; its appearance and flavour, and ease of culture are all in its favour. The best kinds include: *Golden Nugget, Golden Jubilee, Chiswick Peach, Golden Queen;* and there are many American varieties worthy of British consideration.

I have just room to mention some Tomato novelties. One is the "*Cherry*" *Tomato,* a small-fruiting plant, carrying about twenty bunches of fruit, of about eight or twelve, one inch or so in diameter. A splendid mid-season Tomato, providing abundance of small but good dessert fruits. The "*Red Currant*" *Tomato* cannot be recommended for edible purposes, but is extremely ornamental grown upon trellises, etc. The "*Pear-shaped*" or "*Fig*" *Tomato* is a very vigorous and early variety, and should receive attention. There are many pear-shaped kinds grown in the south of Italy; but I can find only one British-grown variety—*Nisbett's Victoria*—and seeds of this are probably unobtainable. On the whole, there are too

many modern improvements to allow these older sorts to retain a share of public favour.

THE EGG-PLANT or AUBERGINE (*Solanum melongena*).—This is a plant of the future; for when its excellent qualities become generally known, and its culture understood and popularly adopted, it will probably leap into public favour like the Tomato has done. The latter vegetable-fruit is one which, with many people, demands an acquired taste; and the Egg-plant is a somewhat similar subject, only waiting to be known in order to become popular. Its uses are at present limited to being cut into slices, fried in oil, or as an ingredient in stews and soups. But there is another excellent side to its character—that of the decorative. All the variations of the Egg-plant are most handsome, in foliage, flower, and fruit; and a conservatory embellished with a few pots of this interesting plant acquires a valuable additional attractiveness. The Aubergine is essentially a greenhouse subject, although, in good summers, outdoor culture is possible. The seeds must be sown in March, in a strong, moist heat, and, when the seedlings have had about six weeks' strenuous growth, they are pricked out, either on a hotbed or into small pots. The latter are returned to the source of heat—a plunge into a hotbed is a good method—and grown on steadily until very well rooted. After this, the plants are treated in a manner suited to the method of culture—in or out of doors. For the latter purpose, the plants are usually placed in four-inch pots, gradually hardened off, and planted out in June. The site must be warm, sunny, and rich. Two feet between each plant should be allowed, and a stick provided for support. When full greenhouse culture is intended to be given, the usual "shifting" up to the fruiting-pot size is the procedure to be observed. The Aubergine forms an erect, bushy plant, bearing its fruit somewhat after the fashion of the Tomato, only a certain number of which are allowed to remain on the plant. Towards the end of the season, the top shoots of the plants should be pinched off. A liberal supply of clear and manure-water is a great necessity, especially in hot weather. There are many forms of the Egg-plant. Those usually grown for practical fruiting, in Britain, are the earlier quickly-growing varieties, such as the *Early Long Purple*, and the *Early Dwarf Purple*. Other varieties may be grown for the sake of ornamental effect, the best one being *White Egg*, a most handsome subject, of distinct relationship, whose low-growing and branching

habit makes it an excellent pot-plant; the flowers are of lilac colour, and the fruits—of the shape and as large as a hen's egg, and of a pure glistening white—are not often used for food.

CAPSICUMS or RED PEPPER (*Capsicum annum*).—These ornamental, interesting, and useful plants are grown after the manner of the Tomato or Egg-plant, with perhaps a greater care, and longer housing. By sowing seeds, in heat, during February, pricking the seedlings into pots, shifting later, and growing on, plants can be obtained for planting out in the open in May; or pot culture may be continued all along. For the latter purpose, Capsicums are more suitable in these isles; but the large-fruited kinds should be selected, although the smaller sorts (including the Chilies) are not to be despised. A south wall should be reserved for those to be planted outdoors, and the plants for that purpose must be gradually hardened off before placing in their permanent stations; even thus treated, Capsicums cannot be said to be a success outside the glasshouse. The plants are, after all, much better grown under glass. In pots they assume the dimensions of small bushes, with woody stems, and nothing can be more handsome than a plant covered with large green, red, or yellow fruits. A light, rich soil is necessary, composed of turfy loam, leaf-mould, cow manure, and sand. Firm planting is also essential to fruiting. Six-inch pots are large enough for the final potting, and frequent syringeing of the plants is desirable during hot weather. The fruits will hang a long time on the branches after they are ripe, and this, of course, adds to the value of the plants for decorative purposes. Frames may be utilized for Capsicum culture if desired. Abundance of air, moisture, and manure-water should be given in every circumstance. Green-fly and red-spider are to be guarded against. The uses of Capsicums are, first, as a pickle ingredient; second, as a flavouring condiment; and third, as vegetables, boiled. For the latter purpose, there are varieties in which the accustomed pungency is absent, or nearly so. The best sorts for the amateur are the *Elephant's Trunk*, *Golden Dawn*, *Chili Pepper*, and *Celestial;* and a packet of mixed seeds will produce a profusion of ornamental fruits of many shapes, in white, green, red, yellow, golden, and scarlet colours.

THE UNICORN PLANT (*Martynia*).—This plant has a valuable asset on the ornamental side, which perhaps prepon-

derates over the utility. It is indeed a splendid greenhouse subject, of trailing or semi-climbing habit, bearing handsome flowers, yellow or lilac, which are followed by a curious horned green fruit, or seed-pod. These pods, while yet young and tender, are gathered and pickled in vinegar. The fruits should not be more than half-grown for this purpose. The plant yields abundantly, as a rule. Full greenhouse culture, with much heat, is essential all through growth, although the plants may, if desired, be bedded outdoors. The seeds, especially, require a brisk bottom heat to germinate, and the young plants are no less partial to warmth. The plants are of annual duration, and require exactly the same treatment in sowing and potting-on as that given to most tender annual flowering-plants.

THE CUCUMBER (*Cucumis sativus*) is the popular representative of the useful Family of the "Curcubits," which includes, besides the Cucumber, the Melon, Gourd, Pumpkin, Squash, and Vegetable Marrow, suited to a variety of excellent purposes, and all of them may be claimed as decorative subjects. The culture is somewhat exacting, requiring the assistance of heated glass structures, and much depends upon the skill in management of the cultivator. Outdoor culture is amply provided for, however, after the initial seed-germination and plant-raising has been successfully completed under glass; and besides the Vegetable Marrows and Gourds, which are essentially outdoor summer subjects, the Cucumber can be given outdoor conditions, and Melons are also represented by varieties which only require a nominal frame-protection. Where there are no hothouses to rear the young plants, they may be raised in a frame on a hotbed. Two or three barrow-loads of fresh horse droppings put into a cool greenhouse will also give sufficient heat to cause the seeds to germinate quickly. Light, turfy loam is the best soil; leaf-mould and sand should be added. Cucumbers and Melons are best sown singly in small pots. The soil should be pressed down gently, and the seeds covered with half an inch of soil, placed lightly on them. When the seedlings are up, and have made two leaves besides the seed leaves, they should be potted into a larger-sized pot, using the same soil materials. When the roots have filled these pots, the plant will be ready for planting out in the cold frames. Such plants as these are obtainable for planting outdoors the first week in June, and there will not be much doubt about them succeeding. Those plants to receive full indoor treatment all

through their existence are grown on carefully from pot to pot, until they occupy their fruiting quarters. At any rate, up to the first shift, the culture is practically the same for all members of the Cucumber Family. After that stage, separate and special culture comes into operation for each section. It may be well to mention here that, when hot manure is used, it should be made firm before the soil is put on it; also that the soil should not be trodden firm for Cucumbers, but for Melons should always be made compact all over.

With regard to the Cucumber, there is no more profitable and ornamental procedure than growing this subject in a greenhouse. Most glass structures, on account of the extra attention demanded in the upkeep of moisture to combat the hot, dry weather usually prevailing, and the tiring application of liquid to so many small pots, are in a state of woeful neglect during the summer months. In some cases, even Tomatoes fail to give a satisfactory return; but Cucumbers, if properly managed and grown, will rarely fail to prove accommodating. The conditions governing the culture of Cucumbers include an ample provision of water and liquid manure, and this becomes a far easier matter to accomplish where half a dozen or a dozen plants are concerned, than fifty or a hundred or more in the way of floral decoration, especially if the Cucumber plants are grown in the greenhouse border, large, deep boxes, and large pots, for the bulk of soil, besides holding a greater quantity of moisture, can be assisted in liquid retention by the use of a thick manurial mulch, which is not possible, of course, with flowers in small pots; hence, the comparative ease of Cucumber culture. Then there is the advantages of a roof covered with large, handsome leaves, affording desirable shade to such flowering plants one may find room for; and this adds to the utility of the improvised Cucumber house in transferring the almost impossible maintenance of floral supply in hot weather into a certainty.

However, Cucumbers pay the amateur. After his autumn, winter, and early spring floral beauties—which he is wise enough to have been in possession of—have done their best, he should clear his house of all these plants at the end of April, and make ready for the accommodation of the useful Cucumber. The procedure—to be brief—consists firstly in making heaps of rich soil over the hot-water pipes, or on a hotbed; the soil to be, for preference, a sandy, turfy loam. The temperature

of the house should then be raised to at least eighty degrees. When this is accomplished, seeds may be sown, or plants placed, upon the prepared mounds of soil. For a while a temperature of sixty degrees at night should be maintained, until growth has become well advanced, all the time syringeing and ventilating the house freely; and soon the artificial heat may be dispensed with or reduced. No stopping is required until the plants have reached the roof; here they may be trained to suit the convenience of the grower. The fruits must be kept well thinned; and the whole plant should receive copious syringeings, with liquid manure applications to the soil below. As growth proceeds, the soil should receive additions of rich materials to form a larger rooting surface.

Plenty of air, light, and moisture are the chief essentials to Cucumber growing; the leaves of the plant usually afford sufficient shade from the rays of the sun, and, incidentally, to a few flowering plants that may be placed here and there to brighten the house. Initial heat may be dispensed with, if desired, if well-grown, sturdy plants are used, the only object being early produce. Such varieties as *Rochford's*, *Telegraph*, and *Lockie's Perfection*, are used for indoor work.

As WINTER CULTURE is a somewhat exacting process, and the Cucumber is not generally a winter favourite, I shall say but little concerning this phase; but a high temperature, existing in a good house, careful, watchful management, and a scrupulous regulation of heat, air, and moisture are the most necessary items of culture where winter produce is aimed at. Seeds or cuttings may be used to provide the plants, which are raised from September to November for successional supply.

OUTDOOR RIDGE CULTURE may be likened to Vegetable Marrow treatment, with the exception that a bed of fermenting materials is necessary, the plants are more delicate, and in cold summers Ridge Cucumbers are often disappointing, and even failures. Plants, raised in the usual manner and carefully hardened off, are planted out on raised beds or mounds of loamy soil in the first week of May, and afterwards afforded protection by handlight, bell-glass, etc., until established. When growth has well begun, pinch out the points of the shoots; no further interference with the plants will be required, beyond training, after this. Subsequent culture may be generally described as that given to Vegetable Marrows. *Stockwood Long*, *Barr's Excelsior*, *Bedfordshire Prize*, *Long* and *Short*

Prickly, etc., are usually grown outdoors. The *Gherkin* and the *Little Russian Cucumber* are grown for pickling purposes; they are quite small, and require but little culture.

THE JAPANESE CUCUMBER.—This Cucumber is an uncommon kind introduced from Japan several years ago. It is perfectly hardy, of climbing habit, growing some four feet to six feet high, and bearing fruits of good flavour, averaging ten inches to twelve inches long, quite freely, the plant being readily grown in the open air. Seeds can be obtained from most seedsmen, and should be sown where the plants are required to grow. Choose a sunny spot, dig a hole three feet wide and two feet deep, put in a couple of feet of manure, and then replace the soil on top to form a mound, on which plant three or four seeds an inch apart. When the seedlings appear, select the two strongest, and remove the others. Place some stout pea-sticks around the plants, up which they will quickly climb. Give plenty of water, also liquid manure when the fruit begins to form. The Cucumbers should be gathered for use when about six inches long, the flavour then being more delicate than if they are allowed to grow to a larger size. This variety needs little more care than the ordinary kinds, but is more productive, the fruits being considerably longer and of better shape, while if quickly grown, the flavour is certainly equal to the majority of those from plants in frames. Should a border at the foot of a warm wall or fence be available, the site will be an ideal one, and will ensure fruits in a very short time after planting; or a sheltered spot may be selected and trenches containing plenty of manure, covered with at least a foot of garden soil, may be utilized. It all depends on the quality or consistency of the soil and the suitability of the locality as to which system of culture should be adopted. Afford plenty of tepid water as soon as active growth commences, and after a hot day, sprinkle overhead with a syringe or brush dipped in tepid water.

THE VEGETABLE MARROW.—This vegetable, well-known and popular, requires no description; but its culture should receive greater attention, especially from the household gardener. There is no imperative necessity for a manure-heap or hotbed in order to grow good Marrows; but where such can be provided it is an advantage. Good, heavily-manured, well-worked soil will be sufficient, however, and the plants may be planted upon the level ground—perhaps in a slight depression to assist

the retention of moisture; a heap of leaves or decaying weeds and vegetable matter may also be pressed into service. Marrows should, I consider, be trained to climb by a gradual ascent, accomplished by means of wire-netting stretched over a frame and tilted against the wall, or fence, or bank; upon a faggot of wood, a low shed, etc.

Marrow seeds are of an easy-germinating character. They should be sown singly in three-inch pots, which may be either placed in a warm greenhouse with a sheet of glass upon them, or in a propagator. After the seeds have germinated, place the pots near the glass to promote strong, sturdy growth, and repot into larger-sized pots as required. To form a bed for a Marrow, a hole about two and a half feet square and one and a half feet deep should be excavated in the ground in a sunny position and one foot of manure and leaves mixed together in equal parts be placed in the bottom. On top of this about twelve inches of rich soil should be placed. After the plants have been gradually hardened off, one should be planted in the centre of each bed and be protected with a handlight or bell-glass until thoroughly established. Marrows require abundance of moisture at the roots, whilst frequent applications of weak manure are of great assistance during the fruiting season. The fruit should be cut when they have reached a fair size, because if left to grow as large as possible the plants quickly become exhausted. Moreover, the younger fruits are the tenderest. Seeds may also be sown outdoors in April where the plants are to remain; whilst as late as June, seeds of the small-fruiting kinds may be sown under glass with good results ensuing therefrom.

Pen-y-byd is a fine variety for late work. The larger sorts include white, green, yellow, cream, and striped varieties; whilst the smaller Marrows are well represented by the *Custard* varieties, *Bush* or *Cluster*, and *Come and Cut Again*.

THE PUMPKIN AND SQUASH.—The Pumpkin, or Gourd, is not appreciated in this country, if one may judge by the extent to which it is cultivated; and the fact points out a decided loss. The Pumpkin is an economical vegetable-fruit, and may be used for a variety of purposes. Its large size and bulk of flesh proclaims it a valuable food subject, and it would prove an asset in the domestic economy of any household which learned to appreciate its flavour and worth. Indeed, the latter remark is the key to the question of general use. *Very* few

know the Pumpkin. One or two slices of Pumpkin in almost any fruit-pie imparts a rich and delicious flavour, and itself constitutes an excellent fruit for all purposes. Culture of these vegetable-fruits may be generally put on a level with Ridge Cucumbers and Vegetable Marrows, with the exception that they require more room. A hotbed, or mound of fermenting materials, should be provided for Pumpkin-growing, and the plants, raised under glass, should be put out as early as the weather conditions permit, in order to secure a good start. The object of the fermenting materials is simply to provide initial heat to ensure strong and swift growth. Plenty of water and liquid manure are the usual essentials, as well as the careful training and disposal of the shoots so as to prevent overcrowding. In this respect it must be remembered that Pumpkins are very rampant plants—a point that no doubt explains their absence from the smaller garden—and they cover much space; but their large handsome leaves and novel fruit are compensations to all who enjoy the beautiful, and their space-absorbing proclivities may be curtailed by training them—by means of wire-netting frames placed slanting against fences and walls—for many feet along such walls or fences; and nothing can be more effective. An old tree-stump, low shed, manure-heap, or rubbish-shoot can be beautified and utilized in a remarkable manner by planting Pumpkins near them. The ripe fruits may be hung up in a dry, frost-proof shelter all the winter, and used with vegetables in stews and soups, as fruits in pies, tarts, and fruit-salads; and the tops of the shoots may be gathered, when no further fruits are wanted, and, boiled like Spinach, will prove a most delicious and tasty vegetable dish. Pumpkin and Vegetable Marrow Preserves are delicious.

THE SQUASH is a similar subject to the Pumpkin, and requires the same treatment.

There are several kinds of both plants. The *Mammoth Hundredweight*—green, white, yellow, red—are huge novel fruits, and are suited to jam, preserve, or marmalade-manufacture and pumpkin pies. The *Spanish Gourd* is also excellent. A packet of seeds of mixed varieties will delight any gardener. There is, of course, no necessity for allowing these fruits to attain large size; they are delicious when small and young.

ORNAMENTAL GOURDS are not all of an edible nature, and should not be grown for that purpose; but, trained to stakes, canes, trellises, fences, wires, arches, and pergolas, are about

the most handsome plants of vegetable origin one can possibly wish for. The culture is precisely the same as for the larger edible sorts. Great novelty is attached to shapes and colours in these subjects; the names given them indicating their description: *Warted, Powder-flask, Turk's-cap* (red, white, green), *Teasel, Hedgehog, Snake-cucumber, Ostrich-egg, Gooseberry, Bottle, Hercules'-club, Rag, Bishop's-mitre, Syphon, Squirting-cucumber, Red China, Loofah, Onion-shaped, Black Pear, Pear-shaped, Wax Gourd, Egg-shaped, Mock Orange,* and others, in yellow, white, green, red, orange, citron, and variously striped! A medley of colours, shapes, contortions, all quaint, curious, ornamental, and decidedly interesting; affording an excellent opportunity to make the kitchen-garden really handsome and decorative!

THE MELON (*Cucumis melo*).—The Melon can boast of great antiquity, and is a native of the warmer parts of Asia. It can hardly be classed as a vegetable, although its appearance and manner of growth is of a vegetable nature, in close similarity to the Cucumber and Vegetable Marrow; it is, rather, a luscious, cool, and most palatable fruit of high qualities. The culture of the Melon may be generally regarded as the same as that of the Cucumber, the difference being found in the somewhat higher temperature, firmer soil, a greater amount of light and air, with less moisture. Melons are essentially summer fruits with the average grower, and the months that intervene between the end of October and the beginning of May can with greater profit be devoted to some other crop.

Although Cucumbers and Melons *may* be grown in the same house, it is not advisable, for the greater moisture and shade that Cucumbers enjoy would not be tolerated by Melons; therefore separate accommodation is best. For frame culture, a hotbed is prepared in the usual manner, eighty degrees being a favourable temperature at planting-time.

A good turfy loam is the ideal soil, and manure need not be added to any soil unless it be poor. The soil should be piled up into mounds, or ridges, whether in frames or a house; and if arrangements can be made for the occasional addition of fresh soil as the plants grow, great benefit to the rooting powers of the plants will be secured. Melons require, primarily, *sun-heat*, and this fact should be taken into consideration when planting.

If properly managed, Melons do not require much cutting or

pruning. The first consideration is plenty of space for each plant. When two rough leaves have been produced, the shoot is pinched out, resulting in the formation of a couple of side-shoots; these, after half a dozen leaves have appeared, are again pinched. No further interference with the growth of the plants is needed, until the fruits are formed; and then, allowing one fruit only to remain, the shoot should be pinched just above this fruit. It is a procedure of careful selection of useful and removal of superfluous growth, remembering that too much cutting induces disease, and overcrowding destroys fruiting. The rules governing the watering of Melon plants are principally upon the lines of never allowing dryness at the root; a *light* syringeing over the foliage once or twice daily—this latter principally to keep red spider away; an extra supply when flowers are forming; and thereafter just sufficient moisture provided to keep the plants growing healthily. When trained to rafters, the vines must be given support to bear the strain of the heavy fruits.

As this delicious fruit is now a great favourite with growers of all classes, there is no reason why the amateur should not succeed with a few plants, though these can hardly be grown in an ordinary greenhouse; they require a slightly higher temperature, with a limitation of air, and a constantly moist atmosphere—during the early stages, at any rate. If there is no proper bed, they may be grown in pots, or even in good-sized boxes; but the drainage must be very free, and the soil be pressed quite firm. During the early stages, the general treatment is somewhat similar to that for Cucumbers, but rather less heat is necessary, and the plants should not be syringed, nor the place damped down, quite as heavily as for Cucumbers. When watering, the moisture must always be kept away from the neck or collar of each plant, for, if this part is frequently wetted, canker is very liable to set in. If the plants are grown upon a mound of soil, this trouble will be avoided. An important point in the culture of this subject is the fertilization of the fruit-blossoms, when expanded, for the Melon is one of those plants that require to have its fruits "set" artificially. This is done by transferring the pollen from one or more of the male or barren flowers, with a small, soft brush, on to the stigmas of the female or fruit-bearing blossoms. The work should be done about the middle of a bright, warm day, with a rather dry atmosphere prevailing, and all the fruits wanted on each plant—usually five to eight—must be "set" at one

time. If the fruit sets, the blossom will close up in a few hours, and quickly fade away. The male flowers may be readily distinguished, as they are larger than the females.

As a fair amount of sunshine is favourable to the growth of Melons, every means should be provided to ensure it. Whilst the plants are in flower they will need fresh air whenever the weather will permit, but this must not be allowed to reduce the heat too much. While the use of the syringe must be discontinued until the fruits are set, it is advisable to damp the walls and paths during this period, otherwise the plants will become a prey to red spider. Also lightly stir the soil. As soon as a sufficient number of fruits are set, let the foliage be given a thorough syringeing with clear tepid rain-water, and continue to keep the house well charged with moisture afterwards. The trellis should be clothed with healthy foliage, not too thickly placed; and laterals must be removed as they appear, stopping them at the first leaf. During the period when the fruits are swelling the plants will need frequent applications of liquid manure and soot-water; whilst a sprinkling of some artificial manure on the surface soil, well watered in afterwards, will afford a change of food.

CANKER.—One of the worst enemies of the Melon is the canker, and when it appears it will soon affect the whole house. There is nothing better than fresh-slaked lime, rubbed well into the affected parts, which will harden the plants and dry up the moisture in a few hours.

INSECTS.—The insects that chiefly attack Melons are red-spider, black aphis, and thrips. The best and quickest way to get rid of these pests is to vaporize the house.

There are a great many varieties of Melons, many of which are not grown in this country, some being red, some green, and others white-fleshed. Those suited to indoor culture include *Frogmore Scarlet*, *Lockinge Hero*, *Blenheim Orange*, and *Countess of Lathom*. Among the novel and peculiar kinds may be placed: *The Algerian*, *Black Portugal*, and *Paul Rose*; and *Long Island Beauty*, *Early Black Rock*, and *Netted Gem* are very early-maturing varieties. The *Cantaloup*, *Open-air Green*, and *White Flesh*, are frame varieties, and may even be treated like Gourds; and *Calabria* and *Fordhook Early* are two excellent "water" Melons.

GROWING MELONS, CUCUMBERS, AND VEGETABLE-MARROWS IN FRAMES.—It is quite easy to grow these subjects in cold frames during the summer months, although this is not generally

realized or acted upon, consequently frames lie idle which might profitably be used for this purpose. Success depends a great deal on having good plants to start with, and these should be raised or obtained in readiness. The *Improved Telegraph* is one of the best of Cucumbers for frame culture. The Melon usually grown in cold frames is the *Cantaloup*. The flavour is inferior to that of other kinds, but the plant is very hardy, succeeding when some of the better-flavoured varieties fail. As flavour is of most importance, however, such sorts as *Blenheim Orange* and a few other good-class varieties which are also hardy and almost as sure to succeed in the cold frame as the *Cantaloup*, may be given a trial. The soil in the frames should be made very rich by digging in three or four inches of well-rotted manure. In addition to this a hole is dug out in the centre of each light, about a foot deep and as much wide, and filled up with well-rotted manure. The soil which was taken out is put over the manure to form a raised mound. If the hole is filled with the manure when it is hot, it will keep warm for some time, and assist the plants in starting root action and growth. One Cucumber plant is enough for each light, and is better than when more are used. Melons will prosper with three plants in each light, these being put in the centre over the manure; whilst the small-fruiting kinds of Vegetable Marrows may be obtained earlier in the year by frame culture.

SECTION IX

MISCELLANEOUS VEGETABLES

IN this section I have placed those vegetables which cannot be said to possess any decided cultural affinity with other occupants of the kitchen-garden, having peculiar and exclusive demands in the way of cultivation. They are cultivated for the use of their leaves, shoots, or flower-buds; and the inclusion of the unique Mushroom completes a very diverse and yet extremely valuable collection of delicate, choice vegetable growths.

ASPARAGUS (*Asparagus officinalis*).—Under favourable circumstances the Asparagus-bed may be regarded as a permanent establishment, for, improving with age, its qualities will not become at all impaired for quite ten years, whilst many will last double and treble that time if originally well made. A ten- or twelve-year renewal is, however, advisable. Three-year-old plants are necessary for immediate bearing; but those raised from seed sown *in situ* are the best. A sandy loam, deep and rich, suits Asparagus more than any other soil; but any good soil will answer. The plant can be also grown in chalky soils with success, if well manured. Asparagus is also a seaside plant, and, naturally, is very partial to dressings of salt, and a gritty or sandy soil. Thorough drainage is perhaps the essential factor in Asparagus culture, for stagnant moisture is fatal to good growth; neither is it sufficient for the surface spit only to be drained—the subsoil, too, must be well freed from liquid accumulations. There is no necessity for the heavy manuring that is often indulged in, except on poor ground; for a rich, deep, well-dug medium will give the best of results with ordinary manuring and annual top-dressings.

The site for the Asparagus-bed *must* be an open one. It

may be trenched and well-manured several times before the plantation is made—at least once in the autumn and again during the winter. After that is done, the soil should be ridged. Should such procedure be inconvenient, however, a good Asparagus-bed will be forthcoming by deeply digging and manuring the soil in the ordinary manner. Where the soil is not of a good character, the top-spit must be removed entirely, the subsoil thoroughly broken-up and manured, and upon it placed a better medium to provide a surface soil. The bed may be made on the level surface or raised a few inches. It depends upon the quality of the soil and the situation thereof as to what course shall be pursued in this direction; but the raised bed makes for drainage, for one thing, and assists in the improvement of indifferent soils. It is best to emphasize the importance of perfect drainage when the plants are grown upon the level surface. The rows may be, for an average crop, about one and a half foot to two feet apart, and the plants one foot to one and a half foot apart in the rows.

Seeds are sown in April, three inches deep, in dibbled holes, two or three seeds being dropped in each hole, subsequently thinning the seedlings to one plant only, when about six inches high. Plants may be secured, if more convenient, and placed at the same distances apart as the seed-stations. They should not be planted too deeply. Future culture consists chiefly in keeping the bed free from weeds—a most important thing, for otherwise ruin results. To do this more effectively, narrow beds, say, three feet wide (with a small pathway between), carrying a couple of rows of plants, are advisable.

As soon as the shoots appear above ground, in early spring, a light covering of hay, straw, grass cuttings, leaf-mould, or similar material, may be placed over them, both as a protection from frost and a means of blanching. This litter can be removed after the month of May has passed, or perhaps left to enrich the bed. The shoots may be cut with a sharp knife just below the surface of the bed, or pulled with a twist therefrom; but extreme care should be exercised in the operation, or great injury will be done to the roots and younger shoots. Cutting should cease by the end of June. In exposed positions supporting stakes or sticks should be given to the subsequent light-stemmed, feathery foliage. As soon as these leafy stems change colour, in the autumn, they should be cut down close to the ground, the beds thoroughly cleaned and raked or lightly and carefully forked over. This latter operation should be

repeated in the spring, all weeds also being removed, and a couple of inches of well-rotted manure spread over the whole bed.

Perhaps the best-known and most profitable variety is *Connover's Colossal,* a splendid, large, all-round sort; *Purple Argenteuill* is a late sort, and so is the *Purple Dutch; Mortlake Giant* is very suitable for those who wish to force Asparagus, a process I do not recommend the amateur to attempt; and the *Green Canadian* and the "Mammoth" special varieties offered by most nurserymen are equally useful sorts.

THE GLOBE ARTICHOKE (*Cynara scolymus*).—This vegetable consists of the "flowers" of a four-foot plant. These "flowers" are composed of scale-like leaves, overlapping one another, and fleshy at the base. It is propagated either from seeds, "suckers," or division of the old stools; the best one of these methods being that of using the "suckers," or shoots, that spring up from the root-stock of the matured plant in the early part of each year. This process, however, requires care, for each shoot should retain a certain portion of the root-stock from which it is cut, without seriously injuring the old plant. The Globe Artichoke is a perennial plant, but it deteriorates after a growth of three or four seasons, and requires replacing by younger stock. Where there is an existing bed of this vegetable, a few shoots may be allowed to remain to provide a continuation of supplies until the new bed comes into bearing; all the rest being removed for new stock purposes. The "heel" is trimmed and dressed, the leaves shortened, and the shoot is then planted in a bed of rich, moist, deeply-dug and well-drained soil, in rows, with as much space from plant to plant as can be afforded—two or three feet, at least. Planting must be done firmly, but not too deeply, and water given to each shoot. Ample liquid supplies are often necessary during growth; and this, together with the use of the hoe, is practically all the cultivation demanded. The soil, moreover, must be of a well-manured character, rich in humus and moisture-retaining. Sandy loam is an excellent medium. The shoots may, of course, be given special initial culture in nursery-beds, if thought desirable. Produce from these youngsters, if well-cared for, will be gathered during the autumn of the same year; and the same results attend those raised from seeds sown in February, in a gentle heat, and planted out in May. Where facilities for the latter procedure do not exist, seeds may be sown in April

or May in the open air, and the resulting plants allowed to remain, thinned out to the required distance apart; but these will not give results until the following year. Other methods consist in successional planting of plants, when obtainable; also in cutting back the old plants close to the earth at intervals during the spring and summer. The Artichoke, however, is at the height of its possible perfection in its third season. New shoots can always be produced by cutting back the flowering stems.

In dry weather, copious waterings with clear and manure-water are necessary, and a mulch of rotten manure, leaves, etc., is very beneficial. Globe Artichokes are not altogether of a hardy nature, and in many districts protection during the winter is imperative; and it is usually advisable to place a light heap of leaves or litter over the stools on the approach of hard weather, or to give an earthing up of loose soil; a covering of litter, upon which the earth is banked, is an excellent protection in cold districts. The protecting material, however, should be removed immediately fair weather obtains. The soil between the rows may be dug lightly and manured each year in the spring with advantage. Fresh plantations every year are advisable where space permits; and no bed should be allowed to exist longer than four years.

Artichokes are a most delicate vegetable when properly and well cooked; and it is in its ideal state when young and freshly gathered. The base portion of the "scales" of the heads and the stem just beneath them are the edible parts, although, if blanched by earthing up, the stems and leaves provide a dish not to be despised; and if the heads themselves are gathered when in a very young condition, and boiled like an ordinary vegetable, they will be found to be most excellent.

There are several varieties, but British seedsmen and nurserymen usually offer two stock varieties—the *Purple* and *Green*.

MAIZE, or INDIAN CORN (*Zea mays*).—Most people are familiar with the Maize, or Indian Corn, as grown for forage or as an ornamental plant in the garden, but comparatively few know what a delicious vegetable the "cobs" make when properly grown and served. A hot, dry summer brings the plant to the greatest perfection, and it requires a long season. Seeds are sown singly in small pots in April, and the plants established in well-enriched soil the first week in June. The seeds may also be sown in the open border about the same time

as Beet or Kidney Beans are sown—some time in May, when frost no longer threatens; yet, even though the plants be cut down by frost, if not entirely killed, they will spring up again, and give a good crop. The only attention required is the use of the hoe and an occasional watering. Gathering usually commences at the end of September, although, by sowing seeds of different degrees of earliness, a successional supply may be had until frosts put an end to growth. The heads, or "cobs" are boiled whole, and served with butter; and the smallest and immature heads may be pickled in vinegar.

THE MUSHROOM (*Agaricus campestris*).—Anyone in possession of an outhouse, shed, or cellar, in which an equable temperature and even balance of moisture can be maintained, can grow Mushrooms; and there is no reason why those with outdoor facilities should not be equally successful. Mushrooms, growing naturally in the fields, may be studied as a guide to garden culture. A moderately dry spring, especially during April, and a hot August and September, with heavy dews each night, accompanied by an occasional downpour of rain, always results in a good Mushroom season. But if it be a very wet spring and cold summer, few Mushrooms will be found. The same conditions governing the growth of Mushrooms in a natural state, therefore, are also conducive to their successful cultivation in the garden. As a heavy shower of rain is the natural method of watering in the open pasture, so are good soakings, when required, given with the water-pot to the cultivated fungi—always in a tepid state. Again, as natural heavy dews are the promoters of plump, fleshy Mushrooms, every attention must be given to the damping of floors and syringeing of walls and bare spaces indoors, and the proper application of moisture to the outside beds.

The culture of Mushrooms is a very simple process, and easily accomplished when every detail is strictly observed. It is preferable that the manure should be secured in a fresh condition, if possible. Only the longest straw need be removed. The manure-heap is turned over every day, to allow the rank steam to escape, and on no account is the material permitted to remain undisturbed until it heats violently, or it will lose much of its virtue; neither should it be overdried. Avoid using manure from stables in which horses are receiving medicine or where carrots are used as a feeding material; such manure is injurious and detrimental to the growth of Mushrooms.

In making the bed, the ridge usually measures about three feet wide at the base, tapering to about a width of six inches at the top, with a somewhat steep slope. The long and comparatively clean straw in the manure is forked out, dried, and placed on one side for covering the bed later on. The remainder is formed into a heap as for making a hotbed; this heap being pulled to pieces every four or five days, and rebuilt, with thorough mixing. A further turning is given after this on alternate days.

For both indoor and outdoor situations, the material should be made into a compact bed, by treading or beating it heavily; and while this process will consolidate the bed vertically, the sides will have to be well beaten, and combed down with a fork to give a thatched effect which throws off rain. To prevent violent heating or drying in the centre, deep holes should be made in the bed with an iron bar six to twelve inches apart along the ridge; the excess heat will thus pass off. There are different methods of testing the temperature to ascertain when the correct degree of heat is in evidence. Large growers use "test-sticks," inserted a foot or so into the lower portion of the bed, and withdrawn daily. If the hand cannot then grasp the stick, when removed, without inconvenience, the bed is too hot, and spawning must be deferred until the end of the stick can be held without discomfort. Experienced growers also rely upon testing the heat with the naked hand only; but the amateur should always use a thermometer, for safety's sake. Eighty degrees is the correct temperature for spawning; and this figure must be on the decrease, for if the heat rises the spawn will be killed.

Mushroom spawn bricks, if containing good spawn, will, when broken, present the appearance of a mass of silvery cobwebs and smell strongly of Mushrooms. A mouldy or spotted brick should be rejected, also any permeated by large white, cotton-like threads and miniature tubercles here and there. The brick is usually divided into about eight pieces. The operator simply thrusts one hand into the bed, making a hole in the manure, and forcibly presses in the piece of spawn brick with the other hand, then readjusts the material. The rain cannot thus soak into the holes, but is thrown off. The spawn is thus planted all over the bed at intervals of about nine inches. When, after about three or four days, the spawn has commenced to run, the bed may be earthed. If necessary, the surface is covered with litter previous to earthing to maintain the essential warmth.

Strong, turfy loam is the best for earthing a Mushroom-bed—the top three or four inches of a pasture which has been stacked for some time previously, and chopped fine. Good, strong, loamy garden mould will answer this purpose also. The soil should be moist, and it must be beaten as firmly as possible.

Using soil in a suitable condition will obviate the necessity for watering until the Mushrooms appear. If water is required before this, supply it through a fine rose, at a temperature of about ninety degrees. Remove the bulk of the covering while watering, afterwards replacing it. This covering, moreover, should be removed altogether when the Mushrooms appear, substituting sheets of brown paper, as insects are then not harboured; indeed, it may be dispensed with if the shed is kept quite dark and the bed is protected from cold winds. Mushrooms ought to appear in from five to six weeks after spawning, and continue to do so for two months or more. When, however, the spawn shows signs of exhaustion, a thorough watering with tepid liquid manure in a weak state should be given; this will stimulate the spawn to renewed action. A moist atmosphere is essential to Mushroom growth; therefore the indoor beds, walls, and floor of the shed should be lightly syringed occasionally.

When gathering Mushrooms they should not be cut with a knife, but pulled up with the stems attached, afterwards trimming them. If a knife be used and the old stool left, the latter decays and kills the small "buttons" which are growing around, whereas if pulled up, young Mushrooms will quickly grow in and near the cavity made. If gathered when about three parts developed, the Mushrooms will be solid, fresh, and more palatable on arriving at their destination. To secure a regular supply, make a fresh bed at intervals of six weeks or so.

Should mice, woodlice, or cockroaches feed on the young buttons, spread some phosphor paste on bits of bread and on paper, and lay them thickly over the beds. If the straw with which the beds are covered begins to rot, remove it and put clean material in its place. Fill up with soil all holes made in removing the Mushrooms, and by no means allow rotting ends to remain in the beds. These are small items of attention which have a great influence upon the successful growth of Mushrooms.

SPINACH (*Spinacia oleracea*).—A deep, rich, moist soil is necessary to grow good Spinach, a vegetable noted for its health-giving properties. There are two kinds of Common Spinach

one for summer and another for winter sowings. This vegetable may be treated as a catch-crop. The summer varieties (round-seeded) are sown at intervals of a fortnight, in drills, from February to July, thinning the seedlings out to about six inches apart. The sowings which have to stand the hottest part of the summer are best sown between row of tall subjects, such as Peas, in order to obtain the shade and conserved moisture there afforded. The sorts for summer use are: *Longstanding Round*, *Thick-leaved Round*, *Victoria*, *Viroflay*, and *New Zealand* (*Tetragona expansa*). The latter is a fine, large variety, and is sown in May, and requires but little attention after being severely thinned; the plants may also be raised earlier in the year in heat and planted out afterwards. Leaves from its two- to three-feet stems may be continually gathered all the summer, and the plant is admirably suited to hot and dry situations. The winter varieties include the *Common Prickly*, *Longstanding Winter*, and *Prickly Flanders*. The seeds of these are sown from July to September at frequent intervals, thinning the seedlings out to quite one foot apart. During severe frost protection must be given to these late sorts. The summer Spinach must receive copious supplies of water or liquid manure, and a mulch will assist in keeping down an inherent tendency to run to seed. If Spinach seed is soaked in water twelve hours previous to sowing, it will germinate more rapidly. Care must be taken in gathering. Indiscriminate picking soon ruins and exhausts the crop. Sufficient seed should be sown to enable the leaves to be gathered in moderation to ensure supplies for the table.

ORACHE (*Atriplex hortensis*).—This is really a giant form of Spinach, having stems, covered with large leaves, which rise to a height of four or five feet. There are three kinds—*Red*, *White*, and *Green*, the culture of all of which coincides with that of Spinach.

SECTION X

SALADS AND HERBS

I HAVE grouped Salads and Herbs into one Section because points of similarity occur in culture and use. In the first case, they are all more or less of a "catch-crop" nature—a crop which is "snatched" from the soil between the clearing and sowing of main crops; and in the second, there are a great many Herbs proper that are or can be with advantage used in salads. So far as Herbs are concerned, I intend to confine my remarks principally to those Herbs which are of use either as vegetables, salads, condiments, flavourings, and pickles. There are others, which I do not enlarge upon, that have medicinal value; but they do not concern the kitchen-garden. Herbs proper are used by the cook principally for seasoning and garnishing. There are many others, however, that form most excellent vegetable dishes, and others, again, that provide some of the best salad ingredients. Thus three divisions can be made, each calling for separate treatment to accord with the end in view, and the uses to which they are to be put. Besides these three attributes, there are two exceptional features connected with Herbs that enhances their value—they are, fragrance and ornament. The sweet scents of the old-fashioned gardens seem to have flown with the past. We have scentless Roses, Sweet Peas, and a multitude of gorgeous blossoms that not only refuse to provide fragrance, but often emit evil odours; and if something is not done to counteract the pernicious influence which has been created by the love of the enormous and gaudy, the gardens of the future will do no more than merely please the eye. In this connection Herbs may well be brought forward to take a prominent part in the remedying of the loss of sweet savours in our gardens, both flower and kitchen; for, as I have said, fragrance is one of their most prominent attributes,

after utility considerations. And the floral and decorative side of Herbs will be readily seen. The plants, then, should be cultivated with a five-fold object in view, which fact surely indicates extraordinary usefulness!

PART I.—SALADS AND SALAD HERBS

BURNET (*Poterium sanguisorba*).—The peculiar flavour of the leaves of this plant, resembling that of the Cucumber, gives it a value as a substitute for the latter where its flavour is required and the real article unobtainable. The culture is simple: Seeds are sown in spring or autumn in drills, either in beds or as an edging. No attention is necessary, except to prevent the plants producing flowers, this enabling the supply of green leaves to increase and last longer. The latter are cut with a knife as required. A hardy, almost wild plant, reaching a height of from one to two feet.

CORN-SALAD (Lamb's Lettuce) (*Valerianella olitoria*).—This European salad plant is a widely-distributed wildling, enlisted into the service of the garden and salad-bowl. It forms rosettes of Lettuce-like leaves, somewhat insipid in taste, useful to mix with other leaves in salads. There are several varieties, the *Italian* and *Common* being the best known. The seeds are sown for successional crops from August to October, resulting in a supply of plants until the following spring. They may be sown on any soil and wherever a small space may become vacant, but give better results in a rich medium. Little or no attention is required, which is one of the chief attractions of the Corn-Salad.

CRESS (*Lepidium sativum*).—The common, well-known Garden Cress was originally a native of Persia. It is an annual plant of very rapid and prolific growth, usually and familiarly associated with Mustard, or Rape, for summer salads, the seeds of the latter two being sown a day or two later, when intended to accompany the Cress to the table, as they germinate much quicker. Cress and Mustard seeds germinate anywhere, in fact, and under all sorts of circumstances. They are usually sown very thickly in shallow boxes, in fine soil kept very moist, and the leaves are cut when quite young and tender; otherwise

the plants run quickly to seed, and the flavour becomes hot and unpleasant. Successional sowings every week or two can be made, the seed germinating in twenty-four hours in moderate heat; indeed, the seed may be sprinkled upon a piece of wet material, placed in a cooling oven overnight, and will be found to have germinated in the morning! Cress and Mustard Salads, therefore, may be had at the will of the sower, and with a minimum of trouble. The common Cress is too well known to need description, but the *Australian* or *Golden-leaved* variety is not so popular, although it deserves to be, with its larger leaves and striking colour.

Meadow Cress (*Cardamine pratensis*) ("Lady's Smock"), a British wildling of damp meadows; American, or Belle Isle Cress (*Barbarea præcox*); Winter Cress (*Barbarea vulgaris*); Para Cress (*Spilanthes oleracea*); and Brazil Cress are excellent salad plants resembling the English Watercress, but growing on moist land instead of in water. Seeds of all of them are sown in spring, and the simplest culture is demanded. The *America* and *Winter*—two similar plants—are the most useful of this group, and can be sown successionally all through the year except the most severe winter months. The others may be regarded in a medicinal light rather than that of diet.

Watercress.—This popular salad may be grown anywhere under sufficiently moist conditions; in fact, if its additional pungency is not objected to, the plants are easily and profitably cultivated in any part of the garden, upon level soil, providing they do not suffer from lack of water, which is the simple rule attendant upon every other plant. But, of course, to grow tender Watercress of mild flavour and good quality, water is a necessity—and water in motion an ideal. Watercress is also capable of development—witness the fact that rivers and streams in these isles quickly become overrun, whilst those of more favourable climates become completely choked by huge bushes of Watercress rising to a considerable height! Good culture therefore pays. The methods of growing Watercress are numerous—but all depending upon supplies of liquid—natural or artificial. The existence of natural water accommodation is fortunate and ensures success. The possessor of a running stream may secure abundant supplies of this fine salad by planting roots in or upon the lower banks of the stream, so as to be washed or covered by the water. A sunken bed may be made, into and over which water from a neighbouring stream, pond, or pipe-stand may be continuously or frequently

conveyed. A fairly deep, narrow trench, kept cool and moist by periodical flooding, is useful for the purpose, especially if it be dug on sloping ground or constructed with a gentle incline, because water poured into the top end will flow along the whole trench and saturate it thoroughly; an occasional pailful, for instance, will keep a small trench—of sufficient size to ensure a fair supply of leaves—in splendid hydrometrical condition. Then there remains the greenhouse or hothouse in which to grow supplies for the winter. Here the Cress may be grown in boxes, borders, or pans, placed over hot-water pipes or in warm corners, pieces of the stem or root being dibbled into fine soil an inch or two apart, the whole being well supplied with moisture. Baskets or pots containing cuttings may also be dropped into both indoor and outdoor ornamental ponds or the water-butt. In fact, Watercress grows with such ease, and rarely refuses to flourish under the most crude conditions wherein moisture predominates, that means of culture may readily be devised by the grower to suit his own circumstances and needs. Watercress is usually propagated and increased by cuttings of stem or root, or the young tops treated as an ordinary cutting, and struck in pots or boxes. Any portion of the plant, indeed, placed in water for a while will begin to emit white rootlets, and in that state may be planted where desired to grow. One of the simplest ways to ensure constant supplies of fresh Watercress is to sow seeds in pots. Keep these under glass, and the compost very moist, until seedlings appear, then put the pots in wire baskets, and sling them, an inch deep from the base, in the rain-water-butt. Several baskets can be accommodated in a large butt, and when the last basket has been stripped, the first to be cleared will probably have a second lot of leaves ready for use, for the old roots will send up new leaves in a few weeks' time. If seeds are sown every week or fortnight a successional supply may be kept up even in a small vessel of water. Wire baskets, or the flat-backed wire pockets, can be fastened to nails against the inner sides of the butt, if preferred. It is also easy to grow the Watercress in this style in pottery wall pockets. One inch deep in the water will ensure that the soil of the pots is kept evenly moist, but in dry, dusty weather the baskets should be dipped occasionally, or an overhead watering given.

DANDELION (*Leontodon taraxacum*).—This is so well known as a weed and a nuisance that attempt at description would be ludicrous. But, nevertheless, the cultivated plant is a far

different subject, producing a crop of splendid salading leaves, which may be blanched by the same means as are employed with Endive. A few plants will prove very useful in the kitchen-garden. The root has a great medicinal value. The simplest culture may be afforded with good results.

ENDIVE (*Cichorium endivia*).—After the summer Lettuces have been used, a good batch of Endive is much appreciated, and it may be secured with but little trouble, if reasonable care and attention is given, together with a fair observance of the rules governing its culture. The leaves must be blanched as white as possible to bring them into an edible condition; this is accomplished by tying the leaves together over the heart of the plants, or by placing a board or piece of slate over them, or covering with rough litter, straw, or hay. The plant is a native of the East Indies, and of somewhat tender constitution. Endive is often spoilt by neglect or wrong treatment. A well-worked border, made moderately rich with rotted manure, should be provided for the seed-bed. Sow the seeds thinly, because the seedlings have a spreading habit, and when in a fit condition to transplant a seedling covers a space quite two inches square. Overcrowded seedlings cannot gain strength. This is one cause of the numerous plants one sees that possess large outer leaves and such poor hearts. Every plant should be strong and compact from the seedling stage onwards. Transplant the young plants in their permanent positions after well watering the soil. In doing this, lift them by means of a garden fork, and do not forcibly pull them up, and so needlessly mutilate the roots. Endive is valued most when Lettuces are unobtainable, and every plant must be grown to withstand adverse weather. In the case of heavy, retentive soils, it is a good plan to form low, rounded ridges fifteen inches apart. On these ridges plant the Endive at the same distance apart, when the cultivator will find that the outer leaves will rest on the gentle incline, the centre will heart freely, and practically every leaf will remain sound, even if long spells of rainy weather and occasional frosts are experienced. Firm soil is essential to success, and where it is stiff and lumpy, the cultivator should, before putting any plants in it, thoroughly break it up. All this tends to the production of big hearts that are crisp and blanched, with few outer, useless leaves. In low-lying districts, where the soil is of a clayey, retentive nature, the cultivator may have some difficulty in preventing loss through decay when

the plants are large enough for blanching, owing to the excessive moisture. It is a good plan, in such cases, carefully to scrape away a small quantity of soil from the surface immediately underneath the basal leaves. This can be done without disturbing or damaging the plant in the least, and it will certainly remain drier and blanch better. Blanching forward plants in cool frames finds favour with many cultivators, but they often make the mistake of packing the plants too closely together, with the result that many of them decay. The remedy consists in removing some of the useless outer leaves, and disposing the plants more thinly. There are several distinct variations in cultivation, the best known being the ordinary *Curled Endive*, of two kinds suited to summer and winter use; the *Moss-curled*, which is very decorative; and the *Broad-leaved* or *Batavian*, a splendid winter salad, particularly tender and crisp, and extensively cultivated. The flowers of the Endive, when allowed to form, are well worthy of a place in the flower-border. They are really pretty, of a blue colour, and very effective.

THE LETTUCE (*Lactuca sativa*).—This salad plant, a native of India, is so well known to everyone as to render any attempt at description superfluous. It may be pointed out, however, that few people ever grow the Lettuce to perfection, on account of its very pronounced tendency to run to seed instead of hearting. Seeds are sown, for an early supply, in frames, at the beginning of the year; or there are varieties which may be sown during the previous autumn to stand through the winter. In either case, early supplies are ensured. The autumn-sown seedlings are transplanted into their permanent quarters before the winter arrives, while those sown early in the year may either be pricked out in other frames or under cloches, or in the open wherever a sheltered spot is available. The main sowings are successional, and may be performed from February (upon a spent hotbed or in an open frame) to July. The mistake often made with Lettuces is that the seedlings are allowed to stay too long crowded together in seed-beds; it is far better to transplant an inch or two apart in nursery-beds of good soil as soon as the seedlings are large enough to handle, and from there removed to the position they are to occupy as adult plants. The seeds may also be sown very thinly in the place where they are to remain, and the plants thinned gradually to between six and twelve inches apart; all the

thinned-out plants may be transplanted elsewhere. The Lettuce should be treated as a "catch"-crop, or side-issue, and only a few seeds sown at a time—say, for a small garden, once a month. The soil must be rich, friable, and moist, having been previously well dug and manured. The main point of culture is *rapid growth,* which must be encouraged in every possible way—by cultivating the soil with the hoe, the provision of copious supplies of water and liquid manure in dry weather, and a supplementary mulch of manure or litter during the hottest portion of the year.

Lettuces can be safely wintered, even where no pits or cold frames are at command for winter protection. The procedure is: Mark out a bed twelve feet wide, running east and west; throw up the soil in the form of a ridge, mixing with it a good dressing of well rotted manure. Make the sides of the ridge firm and even; then plant on the south side strong, sturdy plants of the Cabbage varieties, six inches apart, and mulch the surface of the soil between them with partly decayed manure. Should the frost be very severe, a little dry bracken or stable litter may be lightly spread over them in the evening, but removed whenever the weather is favourable. They will thus pass safely through very severe seasons, and be ready for use nearly as early as those that have had the protection of a frame.

There are two classes of Lettuce—the Cos, a tall, upright plant, the leaves of which require to be folded around the heart and tied in that position with bass, in order to encourage heart formation, and blanching, and to prevent premature running to seed; and the Cabbage, or dwarf, type, which forms compact hearts without assistance. These, again, are divided into varieties for summer and autumn use. Besides the standard varieties, every seedsman has a speciality of his own—a fact which applies also to the dwarf kinds. These latter are also legion. The smallest are the best for quick growth. For winter use, the following varieties are useful: Cos—*Covent Garden White* and *Brown, Hardy Winter White, Brown Bath.* Cabbage—*Hardy Green Hammersmith.* Those gardeners who attempt any form of French gardening, the cloche system, or early forcing in glasshouses, should obtain a supply of seeds of the *Parisian Cloche Lettuces,* or *Harbinger Forcing;* while many of those previously mentioned will lend themselves admirably to these systems.

Lettuces may be boiled and eaten as Spinach, if desired; and the tenderest stalks of the plant, when running to seed,

are cut into lengths, peeled, and put into jars with syrup, and thus candied form a delicious confection styled "Mock Angelica," on account of the resemblance to Angelica similarly treated.

MUSTARD (*Sinapsis alba*).—A plant of rapid growth associated with Cress as one of our best small salads. The seeds should be sown a day or two later than those of the Cress they are to accompany (see Cress for culture). Rape seed is often substituted for Mustard seed; there is not much difference in any respect. In China, two other kinds of Mustard are grown: one, a tuberous-rooted vegetable, with Radish-like roots of good size; and the other a five-foot plant, possessing large leaves, fifteen inches long, which are used as Spinach. The flavour of both Mustards, it is averred, are mild and most agreeable. The leafy kind is a subject for autumn sowing, and its leaves are used as a winter vegetable.

NASTURTIUM (*Tropæolum*).—The leaves of this Indian Cress are not used nearly as much as they should be, in salads, during the summer, for which purpose they are most excellent. The flower-buds and seeds, too, form a very agreeable pickle. The utility side of the Nasturtium is undoubtedly very much neglected in Britain, the plant being grown chiefly for its floral attractiveness, and with much reason. There are both tall and dwarf, single and double strains among the common Nasturtiums, and a wide range of colour continually being added to; while the tuberous-rooted Nasturtium and *Tropæolum speciosum*, a refined climber, are excellent for hiding ugly spots in the kitchen-garden.

PURSLANE (*Portulaca oleracea*).—There are two varieties of this Salad-herb, which differ only in the way of colour of the leaves—the *Green* and the *Golden*. The plants are of annual duration, grown from seed sown in drills in light soil, successionally, from May to August; and the leaves and stems, used as salads or cooked as a vegetable, may be gathered about two months from the date of sowing. Sowings may also be made on hotbeds or in frames to secure a winter and early spring supply. If plenty of water is given them, the plants will supply sufficient material for two or three gatherings.

WINTER PURSLANE (*Claytonia perfoliata*).—This is an entirely different style of plant, of peculiar appearance; but its culture and uses are identical with that of the ordinary Purslane.

THE RADISH (*Raphanus sativus*).—There is scarcely any food-plant that is more widely known and used than the Radish, and hardly one so badly treated! I suggest that the ease of culture that characterizes the Radish is responsible for the latter fact, as this induces carelessness on the part of the gardener. Radishes which are badly-grown and strong are unfit for human food; on the other hand, a quickly-grown, mild, crisp, "watery" Radish is a luxury, not too often met with! The essential conditions governing the production of the latter kind are—speed of growth, a moist soil, and thin sowing; the neglect of the latter often accounts for failure to produce palatable roots. Size, as a rule, means deterioration; although, under good culture, large roots can be obtained of excellent quality. Radishes form one of the most accommodating of catch-crops. A few seeds dropped along or between the drills of Carrots, Beet, Onions, etc., will germinate and produce eatable bulbs before the main-crop plants require their final thinning. A few seeds also scattered on the surface after Potato sets have been planted will be ready for use by the time the ground needs to be disturbed to cultivate the Potatoes; and the same operation can be performed upon heaps of leaves, rubbish, manure, etc., that may lie awaiting future use; in fact, the smallest vacant space may be utilized. A shallow bed of fermenting material, upon which is placed a six-inch layer of rich, fine soil, makes an ideal Radish bed for early spring use; as also does a mild, or even a spent, hotbed upon which a frame is placed. A deep, rich, friable soil is much appreciated by the Radish; and a cool site in summer is a necessity, when the bed should be made firm to induce bulb-formation. The winter kinds require an open site, plenty of air, light and moisture, and severe thinning-out. In every case, quick growth should be the main object of the gardener. Sowings of the earliest and tenderest varieties are made, under glass protection, from January onwards until March or April, when the succession is maintained by the outdoor sowings. But the sowing of summer Radishes is usually suspended by the end of August or beginning of September, and that of the winter varieties substituted. The golden rule to be observed by growers is a small successional sowing every three weeks, the wide scattering of the seeds, and every incentive to quick growth afforded the plants. Leaf-mould is a fine medium for the early sorts.

The varieties are very numerous. They may be culturally divided into three groups—(1) Early or Forcing Radishes

(2) Summer Radishes; (3) Autumn or Winter Radishes. The first group include such sorts as *Wood's Frame* and *French Breakfast.* The latter variety is greatly to be recommended also for the summer sowings, in which the *Turnip* varieties, white, scarlet, or mixed, will figure largely; *Golden Dresden* is a good novelty with a yellow skin. The long-rooted kinds, which should be given a good, deep, free-working soil, are treated more as a main- than a catch-crop. Those varieties suited to winter culture are: *China Rose*, *Black Spanish*, and *Californian* or *Mammoth White.* These are, as a rule, of much larger size than the earlier sorts.

It should be borne in mind that, although the main portion of a Radish for edible purposes is the root, the young leaves, before they become rough, are excellent in salads and very healthful, and the seed-pods, if gathered whilst very young, make an excellent pickle, salted until tender, and then bottled in hot vinegar.

RAMPION (*Campanula rapunculus*).—Its generic name—Campanula—proclaims the floral value of this plant, apart from its utility in the salad-bowl. It bears, when allowed to run to seed, sheaves of good-sized bell-flowers, of a fine blue shade, and any spare plants may be used as biennials in the flower garden. But it has even more useful points, for the whole plant—leaves and root—make an excellent addition to salad ingredients. The roots may be described as resembling a white long Radish, and they are used in similar fashion. Thus we have in Rampion a plant of the greatest usefulness. Seeds are sown in the open ground in May, after the manner of biennial flowering plants. The seeds, however, are extremely fine, and care must be taken not to sow thickly; at any rate, thinning must take place early. Copious supplies of water are essential to prevent the plants running to seed as the summer advances. As a safeguard against this latter contingency, one or two further sowings should be made, the last one in June. The leaves may be used as required; but it is as well to allow a good percentage of plants to continue their growth unmolested, in order to secure good roots. These will be ready to lift in October, and may be stored in sand if not wanted for immediate use. Good, well-worked, rich soil will give fine results.

SORREL (*Rumex*).—There are several kinds of Sorrel, but the most useful are those of a broad-leaved nature. There can

be no better plant used in salads where an acid flavour is appreciated; and the leaves may be boiled for table use after the manner of Spinach. From seeds, sown preferably in spring, leaves large enough for use will be produced in eight or ten weeks. A deep, moist, friable soil is the best medium, and the plants should be thinned to quite a foot apart. A plantation of Sorrel will last for several years, if care is exercised in gathering, which should be performed by cutting a few outside leaves from each plant. By growing plants in frames, a supply of tender, mild Sorrel leaves may be had all the year round. No heat is required, the protection of the glass alone inducing more luxuriant growth. Plenty of moisture is necessary in hot weather. A leaf or two, shredded, and judiciously mixed with other salad ingredients, imparts a very pleasant and slightly acid flavour to what might otherwise be an insipid salad.

WOOD-SORREL (*Oxalis acetosella*).—A plant with leaves similar in taste to ordinary Sorrel, and found growing wild in our native woods and shady places, Wood-Sorrel may be grown with advantage in a cool, moist, shaded portion of the kitchen-garden, which perhaps might otherwise be unoccupied and wasted; but there is also a cultivated form which produces edible bulbous roots, of indifferent insipid flavour, resembling in shape very small Turnips or Radishes. The leaves are of better repute, and are very useful. Seeds or bulbs may be planted to secure fresh plants.

HERB PATIENCE (*Rumex patientia*).—Herb Patience, or Patience Dock is a little-known plant resembling Sorrel in form of leaf, having the same uses and culture, but reaching a height of four to six feet. One plant would suffice for any garden. The flavour is less acid than Sorrel.

PART II.—VEGETABLE-HERBS

GOOD KING HENRY (*Chenopodium bonus-Henricus*).—Good King Henry, Mercury, or Perennial Goosefoot, is a valuable vegetable-herb which ought to receive greater attention from British gardeners. Seeds are cheap, and the plants are very hardy and accommodating, continuing in good growth for a number of years, and requiring the use of the hoe only in the way of cultivation. Seeds are sown in the spring, and

the seedlings are pricked out in rich nursery-beds to strengthen, before being finally planted out in permanent situations. There are two uses attached to this plant—as Spinach, by gathering the leaves; and, preferably, as Asparagus, by cultivating the young shoots. For this latter purpose, a well-dug, heavily-manured bed should be made in a warm corner or border, which will not need to be disturbed thereafter. The soil cannot be too deep, rich, or friable. The plants for this purpose may be raised the previous autumn, and planted as early in the spring as possible, one foot apart. In April or May, an abundant crop of young, tender shoots will be produced, and, if well grown, will be about the size of Asparagus, and may be cut after the manner of that vegetable. To prepare these shoots for cooking, peel off the outer, tough skin, stripping it from the bottom of the stem upwards; then, after washing, boiling until tender should be the rule. This vegetable may be served simply as Asparagus is served, or upon toast, or in butter, gravy, etc., as desired. Mercury may be obtained quite a fortnight in advance of the first Asparagus cuttings, and for several weeks after that crop has become exhausted.

FINNOCHIO (*Fœniculum dulce*).—The Florence Fennel is an Italian subject of merit, worthy of the attention of every gardener on the look-out for something really good as an addition to the ordinary run of vegetables. It is a favourite dish on the Continent, but almost unknown in Britain. In taste and culture there is a certain resemblance to Celery, but the flavour is much more delicate than Celery, and the culture differs in the absence of the trench, although the plants have to be earthed up. Seeds are sown—successionally every month if desired—from the end of March until August. The plants are characterized by quick growth, and soon come into use—the sowings of March producing plants ready for use in July; and those of August about November or December—the latest crop being given some protection against frost. The seeds must be sown thinly, and the seedlings thinned out to quite six inches apart. The whole plant rarely exceeds two feet in height. The leaf-stems are very broad, and as they grow become swollen and rounded into a bulb-like formation of a light green colour. These stems are earthed up, like Celery, about three weeks before they are required for use. They attain, under good culture, the size of the fist, and possess very firm, white, sweet flesh, when boiled. Finnochio forms a very delicate and appetizing dish. The

manner of growth is very peculiar, the swollen stems overlapping one another in fish-scale fashion. The culture consists mainly in vigorously stirring the soil around the plants, and a plentiful supply of water. Seeds are offered by several seedsmen in this country.

EDIBLE BURDOCK or GOBO (*Lappa edulia*), a native of Japan; **EVENING PRIMROSE** (*Œnothera biennis*) (see page 44), a very well-known plant of the flower-border; and **GOLDEN THISTLE** (*Scolymus hispanicus*), are three long-rooted herb-plants that are used as vegetables. The three root-formations are very similar, requiring nearly identical culture; but before they can be seriously reckoned among the more useful vegetables, the roots will have to be greatly improved by cultivation. These plants are not to be recommended, except for experiment and improvement by culture.

SKIRRET.—(See *Tuberous-rooted Vegetables Section*, pages 60, 61). **CAPSICUM.**—(See *Vegetable-Fruits Section*, page 102).

PART III.—FLAVOURING HERBS

ANGELICA (*Angelica officinalis*).—This herb, an Alpine subject, is a perennial, having four-feet stems with three-feet leaves and umbels of small flowers. The plant requires a rich, moist, deep soil. Seed is sown in spring in nursery-beds, and the seedlings are planted out later on. The following year the leaves may be cut and used; and the third year, when the plants run to seed, they are removed from the ground and a fresh plantation made. Both the stems and leaves are preserved in sugar, and make an excellent confection; while the root is used in medicine and the seeds in the manufacture of certain liqueurs. A most useful plant for any garden!

ANISE (*Pimpinella anisum*).—Found in a wild state in Greece, Egypt, and parts of Asia Minor, Anise is well-known for its perfumed and delicately-flavoured seeds, used in sweet confections and as a medicine. Resembling Celery in its foliage at the base of the fifteen-inch stem, the upper leaves being more finely divided, Anise grows rapidly from seed sown in April, and is of most easy culture. A well-drained, warm soil

suits it best; but the plant is very accommodating, and will thrive in most gardens. It is of annual duration, and the seeds are the only part used.

BALM (*Melissa officinalis*).—This is a perennial herb, growing eighteen inches high, branching and spreading in habit, with very green leaves, which are aromatic, and used principally in the manufacture of scents and liqueurs, as well as for seasoning certain dishes. Although seeds are sown, Balm is best propagated by dividing the clumps—almost at any time of the year except in very hot weather. This herb will grow in any position, but, coming to us from Southern Europe, it naturally prefers a warm border. Its culture is almost negligible.

BASIL (*Ocymum basilicum*).—A member of the same family as Balm (the Labiatæ), this herb forms an ornamental little bush about one foot in height, producing a wealth of neat spikes of white flowers. The best method of culture is to sow the seeds on a hotbed in March or April, under glass, and plant out the seedlings in May; or previous to this the seedlings may be pricked out into pots or boxes, and grown on for a time, being afterwards planted out in June. The plants are very tender, being natives of a warm climate. Plenty of room should be given, as well as a light, rich soil, and moisture should be liberally provided. Although the stems are cut down and dried in the usual manner, green shoots may be encouraged by hoeing around the plants after gathering the stems, until the winter approaches, when some of these shoots may be lifted, planted in pots or boxes, and placed under glass to furnish a winter supply. This is a very aromatic plant, and the leaves are used in perfumes and seasonings. There are two distinct variations—termed respectively *Sweet* and *Bush Basil*. The flowers are worthy of a place amongst other occupants of the floral quarters, and the plants make an agreeable addition to our garden perfumes.

BORAGE (*Borago officinalis*).—As a floral subject, Borage is not to be despised, its splendid spikes of bright blue flowers being very showy. It is native to the shores of the Mediterranean, grows about one foot high, and has become naturalized in England as a wildling. No particular culture is required, and it will grow anywhere and on any waste spot. Seeds are sown at any time from spring to autumn, and the plant grows

quickly and soon blossoms. It prefers a chalky soil. The plant is used for making claret-cup and other cordials; but its value in the garden probably centres in its flowers.

CARRAWAY (*Carum carvi*).—The seeds of this plant are too well known to require description, but it may not be generally known that the root, which grows to a good size, is edible, and of a Carrot flavour, and that the leaves and young shoots are eaten in salads in some countries. The plant is a biennial, one foot or more high, in many places growing as a wildling, and cultivated by sowing seeds in May or June, and the plants thinned out. Growth and maturity are very quick, and in July and August the seeds are ready for gathering.

CLARY (*Salvia sclarea*).—Here again is an ornamental gem cropping up from the commonplace. The proper leaves at the base of the plant are large and wrinkled like a Savoy Cabbage, but the tall flower-spike is clothed with smaller leaflets, which at the extreme tip is beautifully coloured either white, purple, or red, imparting a striking effect, and having the appearance of highly-coloured flowers. The blossoms, however, are very small indeed. These plants are now much used in floral bedding schemes. The utility side consists in the leaves being used for seasoning. The seeds are sown in drills and the plants thinned, or in a seed-bed, and the seedlings pricked out, in May. Hoeing and watering are two essentials of culture, until, in August, the leaves may be gathered for use, with a continuous supply far into the following year. Although perennials, the plants should be treated as biennials, either for flowering or kitchen uses.

CORIANDER (*Coriandrum sativum*).—A two-foot, branching annual herb of weedy appearance, Coriander supplies a useful article of commerce in its seeds, which are used in culinary preparations and confectionery. A warm site with a light soil is preferred by this plant, whereof seed is sown in spring or autumn. The culture is of the simplest nature.

CUMMIN (*Cuminum cyminum*).—The seeds of this herb, which are of a pungent, aromatic flavour, are used for flavouring soups, pickles, etc. The plant is dwarf (four inches in height), and the seeds, sown in May, produce plants which mature and

ripen seeds in their turn in July, so that a short growing season, with little or no attention, characterizes this useful subject.

DILL (*Anethum graveolens*).—This herb affords very little use to the average gardener, its qualities being medicinal rather than culinary. Its appearance has a resemblance to Fennel, and the taste of its leaves favours both Fennel and Mint, and is not very attractive. The seeds are chiefly used, sometimes in pickles. A warm, well-drained soil and ordinary culture are its requirements. It is an annual, and therefore propagated by seeds sown in April.

HYSSOP (*Hyssopus officinalis*).—This plant is not in very great demand, although in the kitchen-garden its value is decidedly ornamental, as it forms a close undershrub, suitable for an edging, bearing pretty flowers of blue, pink, or white colour. Hyssop is very suited to chalky soils and warm positions. Seeds may be sown in April; but the usual method of propagation is by division. The whole plant is intensely pungent and bitter, and the tenderer parts, such as the tips of the branches, can be made into a hot, but bitter, condiment.

LAVENDER and ROSEMARY may be mentioned here in a recommendation for use as fragrant and decorative shrubs wherever their presence can be accommodated; and they take a place in this book in support of my plea for a recrudescence of our old-fashioned scented plants. Rosemary leaves are often used for seasoning. Both shrubs delight in a calcareous soil, and require nothing in the way of cultivation that is worth the mention.

MARIGOLD (*Calendula officinalis*).—Marigold is common enough to almost justify its description as a weed. The Pot Marigold, however, is cultivated on account of its use in many culinary preparations, and for colouring butter, etc. It is an annual, grown from seeds sown in March, and its cultural requirements are practically *nil*.

MARJORAM (*Origanum*).—There are two sections of this splendid herb, both being of the greatest utility in cookery. The perennial kind is of most easy culture and will grow anywhere. It is best grown, however, in clumps amongst similar subjects, allowing each plant plenty of room. The flowers and

scent are both attractive, although the former are small. Grown as edgings, from seed, and kept well clipped, the plants will last for years. The leaves, shoots, and flowers possess excellent seasoning properties when dried, and, with Thyme, forms the basis of dried mixed herbs of commerce. The so-called annual Marjoram is really perennial, but is usually propagated by yearly sowings in March or April. It is a fast-growing plant, and the leaves and shoots are ready for use as early as May. A pretty, bushy, fragrant plant, of identical utility as the perennial Marjoram.

MINT.—Mint is a herb so well known and so universally used that description is entirely unnecessary. Its culture consists in forming a bed of good loose soil into which its running root-stems may travel at will; and it is the best plan to give Mint a site all to itself, for its encroaching proclivities are great and persistent; and the bed, also, should be preferably isolated. If the shoots are unused by the time autumn arrives, they must be cut off close to the ground—and, incidentally, dried and preserved for future use—and a layer of rich soil or compost spread over the roots. For supplies of Mint during the winter months, it is usual to rely on leaves gathered during the autumn and dried by suspension in a warm room; but dried Mint is but a poor substitute for freshly-picked sprays, and these may be obtained in the coldest weather with but little trouble. To force Mint, simply select a few strong roots several inches long, laying these about an inch apart in shallow boxes filled with finely sifted garden soil. The roots are then covered with an inch of fine soil, a good watering given, and the boxes placed beneath the greenhouse stage. Keep the soil constantly moist, and directly the little green shoots appear place the box in a light, warm position, such as a shelf near the glass in a greenhouse or a window in a warm room. In the event of the supply being greater than the demand, the boxes need not remain in the greenhouse, but will be quite safe in a cold frame or light shed where frost is not likely to enter. On the other hand, if the shoots are cut, tied in small bunches, and placed in receptacles containing sufficient water just to reach the tips of the stems, they will keep fresh, and even continue to grow.

RUE (*Ruta graveolens*).—I fail to see the use of this herb from a kitchen-garden point of view, although it is generally regarded as a seasoning agent; but this attribute belongs to old-time

cookery. The leaves of Rue possess a very strong, most disagreeable odour, and a bitter, pungent flavour. Still, there may be flavouring concoctions whereof Rue is an ingredient, and wherein its disagreeable qualities are efficiently disguised. However that may be, those who wish to grow this plant should sow seed in spring, or plant divided tufts in good, well-drained soil. No particular care is needed beyond cutting the stems down every couple of years, to promote fresh growth; and the plant will continue to flourish for many years. Rue forms a bush about two feet high.

SAGE (*Salvia officinalis*).—Every one knows Sage; very few gardens are without a plant or two of this splendid seasoning herb; therefore a few remarks upon its culture—(which is of the simplest description)—will suffice. Sage is very hardy in this country, despite the fact that it is native to Southern Europe; and its principal requirement is a well-drained, dry position, and a certain amount of lime in the soil—a chalky soil suits it admirably. The plant may be used for edgings, if kept clipped close.

SAVORY (*Satureia*).—There are two kinds of this valuable seasoning herb—Summer Savory (*Satureia hortensis*); Winter Savory (*Satureia montana*). The first, an annual plant, not quite one foot high, is grown from seeds sown in April and May, or in March on a hotbed, in good, warm, light soil. In June the tips of the stems are gathered for use, after which branches are produced, and a continuous supply of leaves and shoots are forthcoming for several weeks. The winter kind is a perennial, low-growing, spreading plant, of which seeds are sown in spring or end of summer in drills. It makes a good edging. A well-drained soil is necessary, as stagnant moisture is fatal in hard weather. No attention is required beyond cutting down the stems every spring to within four inches of the ground. Of both varieties the leaves and young shoots are used for flavouring purposes.

TANSY (*Tanacetum vulgare*).—The leaves of this herb are useful as seasoning material. The plant grows about three feet high, is a perennial, and requires no culture whatever—any odd corner may be allotted to it. Seeds and division are the means of propagation, and the flower-heads should not be allowed to form, thus prolonging and increasing the supply of leaves.

TARRAGON (*Artemisia dracunculus*).—Tarragon is an aromatic herb employed chiefly for making Tarragon vinegar, and succeeds in almost any soil. Plants should be increased or propagated by division or from cuttings, as those raised from seed are not always aromatic. This may be accounted for by the fact that there is a plant sometimes grown which greatly resembles the Tarragon, but it is quite destitute of the real Tarragon flavour. To obtain healthy young shoots of this herb, a fresh bed should be made yearly large enough to meet the demand. It is readily multiplied by division, or by pulling up young pieces when about three inches to four inches high and dibbling them about four inches apart in well-prepared beds. Water the soil well if the weather proves dry. April is the best period of the year for this work. If desired, green leaves can be obtained during the winter by lifting and potting roots in the autumn and placing them in gentle heat. Tarragon is a native of Siberia, and is therefore quite hardy.

THYME (*Thymus vulgaris*).—No better edging plant than Thyme can be used for the kitchen-garden. Its uses, too, as a seasoning material, are excellent, the flavour being one that suits most forms of cookery in which meat takes a place, and is used generally and freely in stuffings and forcemeats. As a dried herb it is very useful. A well-drained soil in a warm position suits Thyme best, although its accommodating qualities are very good in other positions and soils. It may be propagated by seeds, cuttings, or division of roots. Seeds form the best method of the three, and these should be sown in April, either in the permanent location (thinned to four inches or more apart); or in seed-beds, and thereafter transplanted. When used as an edging, Thyme should be renewed every three years, although it may not appear necessary. Lemon Thyme (*Thymus citriodorus*) is a very agreeable herb, both in cookery and in the garden, for its delicate "lemon" scent and flavour is most pleasant.

PART IV.—GARNISHING AND DECORATIVE HERBS

CHERVIL (*Scandix cerefolium*).—This herb is a native of Southern Europe, and possesses useful, ornamental, and aromatic properties, resembling Parsley to a large extent, and forming an excellent substitute for the latter. The leaves are

ready for cutting about six or eight weeks after seed-sowing. The latter operation may be performed almost at any time of the year during fair weather, in an open situation, except in the hottest parts of the summer, when a somewhat shaded position will be found more convenient. The plants are of annual duration only, and require yearly renewal by seed-sowing. Of course, it is useless to attempt to place Chervil on a level with Parsley, although, for garnishing purposes, and where lightness is necessary, it becomes an excellent substitute for that somewhat heavier decoration. Mixed with salad ingredients—judiciously—the leaves impart a unique flavour by their aromatic properties; and they can be used to flavour other dishes also. This sums up its chief attributes. A few seeds should certainly be sown annually in every garden.

But there is a variety of Chervil (*Chærophyllum bulbosum*) which has resolved itself into a really useful vegetable, by the thickening of its roots, after the manner of a short Carrot. The flesh of these roots is sweet, floury, and aromatic, and they possess excellent keeping qualities. That sounds well, but the roots taste even better. In appearance, Turnip-rooted Chervil looks like a yellowish Shorthorn Carrot. But its culture is peculiar. Seeds may be sown in the autumn, as soon as they are ripe, but they do not germinate until the following spring! The soil must be well-worked and manured, and thoroughly drained, and pressed well upon the seeds, which are only slightly covered. Sowing may be deferred till the spring, if desired, but the seeds, in such case, are recommended to be kept in sand, otherwise they take a whole year to germinate! At any rate, the seeds undoubtedly lose their vitality very rapidly, and are best sown when fresh.

When up, the seedlings only require weeding, watering, and thinning. In July, the leaves begin to wither—a sign of the maturing of the roots, which are ready for use when the foliage is quite dead. The roots, however, are frost-proof, and may be left in the ground till required; in fact, the flavour and consistency is much improved by the delayed harvesting. They are boiled after the manner of Parsnips.

The Prescott variety, from Siberia, is a useful sort, with larger but coarser roots; but it is very prone to run to seed, and must be sown no earlier than end of July.

Turnip-rooted Chervil, together with Turnip-rooted Parsley, form a couple of excellent vegetables, possessing the aromatic flavourings of their respective parent plants; and they will

be welcomed by those desiring useful additions to the vegetable quarters.

CHIVES.—(See *Onion Section*, page 94).

FENNEL (*Fœniculum officinale*).—The ordinary garden Fennel is a five-foot perennial, with Asparagus-like foliage, used for garnishing fish. The seeds are used in the manufacture of liqueurs. It is an ornamental plant for the border where a light-foliage effect is required at a good height, or any odd corner in the kitchen-garden that can accommodate tall plants. The best method of propagation is by sowing seeds in the autumn, which brings the plants into use in the following spring and summer. Little or no attention is required beyond the most ordinary cultivation.

PARSLEY (*Apium petroselinum*).—Apart from its culinary and garnishing value, Parsley has many good points which should commend it particularly to the town gardener, for it becomes a decorative asset even where few things really thrive. Many people sow much more seed than they can ever hope to accommodate plants. This, together with neglect of early thinning, accounts for the plants running to seed early in the season. Parsley should have a very rich soil. Instead of sowing the seed indiscriminately, draw shallow drills and drop a few seeds at intervals of six inches. Cover the seed slightly with fine soil, and when the seedlings show a few true leaves, remove all but one strong plant of each group. Treated thus, with a liberal supply of water should an excessively dry period follow the germination, it will not be long before the leaves touch each other. The adaptability of Parsley for providing a cheap and ornamental edging to the garden walk should not be overlooked, for even though the strongest-growing leaves may encroach a little on the walk, these may be periodically cut back. In showery weather, the whole row may be cut nearly to the ground level, and in a very short time an abundance of new leaves will spring up and take their place. Parsley is a native of Sardinia. There are a few forms, chiefly based on the appearance of the leaves, such as the *Common* or *Plain-leaved*, *Double Curled*, the *Moss-curled*, and the *Fern-leaved*. There is also a distinct variety which produces an excellent edible root.

To obtain a supply of Parsley during the winter and the early part of the next summer, when older plants will be running to

seed, an early autumn sowing—which will often stand through the winter when older plants fail—should be made, about the beginning of August, for preference. If possible, sow the seed where some little winter protection can be given if necessary. Healthy seedlings of last year's sowing, moreover, or the earliest of this spring's crop, may also be potted in seven-inch to nine-inch pots, placing four to six plants in each and near to the outsides. Ordinary soil will answer the purpose. Keep the pots in a shady position until the plants have formed new roots, after which place them in as open a situation as possible. If the pots are a little more than three-parts plunged, the water supply can be regulated better. Do not pick from these, however, but grow as strong a crown as possible. If brought into the greenhouse during mid-winter, there will be a welcome supply of excellent parsley up to the time of new growth the following spring. Having a few plants in pots allows of removal to any cover that may be needed during winter.

THE TURNIP-ROOTED OR HAMBURG PARSLEY forms thick fleshy roots resembling a Parsnip, about six inches long and two inches in diameter. The flesh is white, dry, and possesses a taste resembling both Celery and Parsley flavours. It is a useful addition to our available vegetables, of easy culture, and not affected by frost. Seeds are sown in early spring on well-dug soil, and give treatment identical to that of other tap-roots, and the roots may be gathered for use from September onwards.

WOODRUFF (*Asperula odorata*), an ornamental, sweet-smelling plant, and **WORMWOOD** (*Artemisia absinthum*) are two herbs that cannot claim much attention from the cook; they are medicinal or toilet herbs, demanding little or no culture or choice of site or soil. But they provide an item so much needed in the kitchen-garden—fragrance!

APPENDIX

BORDEAUX MIXTURE.—Dissolve two pounds of copper sulphate in a gallon of hot water, using a wood or earthenware vessel. Afterwards dissolve one pound of caustic lime in a sufficient quantity of water. When the lime solution presents a milky appearance, pour it into the vessel containing the copper sulphate solution, strain the whole through a rough piece of sacking, and add sufficient water to make sixteen gallons of liquid. Stir the mixture well, and use it at once with a knapsack sprayer or other apparatus having a fine nozzle. When spraying, it is important that the liquid touches the underside of the leaves.

SOOT- or MANURE-WATER.—Procure a stout canvas bag, fill it with soot, or sheep, cow, poultry, and similar manures, and tie the mouth effectually so that none of the contents can escape. Then, by a piece of string or wire, suspend the bag—by means of a piece of wood laid across the top of any suitable vessel—in water, until the latter turns a rich wine colour. The liquid may now be poured off, diluted to quite double its bulk, and used; while the vessel containing the bag of manure may be again filled with clear water. Replace the manure, etc., when exhausted.

HOW TO MAKE A HOTBED.—The materials required consist of fresh stable manure in sufficient quantity, with a fourth part of dead leaves. The manure must be strawy, and quite fresh. First of all, throw the manure into a heap, and leave it for a few days to ferment. Then turn it over on to another piece of ground, and work in the leaves. If it is dry or mildewed, water it well. Next day turn it over again, and once or twice afterwards. Measure the frame next, and add at least a foot on, all round. Choose the most strawy portion for the outside margin, as the small stuff can always be used for the interior. Tread each layer firmly. It is well to erect the bed slightly leaning outwards, as this ensures its being the proper width at the top. Continue to build till all the manure has been used, and then, with the fork, remove any loose manure from the sides, throwing it and the remaining droppings into the centre. Tread the heap well finally, and then put on the frame. Throw soil into the latter to a depth of six inches; and, after putting in the thermometer, leave the frame for some days with the lights a little open. When the temperature is about seventy degrees Fahr., it is safe to sow seeds or put plants into the frame.

LIME, AND ITS APPLICATION.—Lime can be applied either as quicklime, slaked lime, or chalk. In the latter form it is of little value, although it may be used if it can be had in plenty, and the other forms are not easily procured. Quicklime should be spread on the surface and left to "slake"; immediately after slaking it should be worked into the soil. The length of time it should be left exposed varies with weather conditions, but for "shell-lime" a period of from twelve hours to two days is generally effective. Quicklime can now be had ground into a fine powder, and this is undoubtedly the best form in which it can be applied to the soil. Slaked lime, being of a moist and adhesive character, is difficult to apply evenly. A larger amount is necessary, but it can be had much cheaper. The refuse from acetylene gas plants consists mainly of slaked lime, and after a brief exposure to the air may be used as such. Lime which has been slaked for some time is always inferior to freshly-slaked lime; hence the best method is to get quicklime, and dig it in immediately after slaking. Gas-lime, in its crude state, kills almost everything in or on the soil; but it is the cheapest form of lime, and the most profitable. It should be applied as slaked lime. Gas-lime will soon lose its poisonous gases if spread over the soil, and on vacant ground no harm is done; but it takes months to lose these gases if kept in a heap, without constant turning, and depreciation and loss inevitably ensues. Of course, if gas-lime is to be spread among plants, it must be previously exposed to the air; on vacant soil, however, it can be dug into the surface after a day or two, where it will act as an insecticide, and the injurious properties will soon pass away.

DESTRUCTIVE PESTS.—Wireworms and leather-jacket grubs make their presence in the garden obvious by the extensive damage done to seedlings and tender plants. The wireworm remains in the soil for from two to four years, then changes into a click beetle. The leather-jacket appears in early spring, has a short but gluttonous life until June or July, then, after a month's rest, is transformed into a "daddy-long-legs." We have the latter only during spring and summer; the former is ever with us. Correct tillage and manuring are the best remedies. Too much farmyard manure in the soil encourages the pests, and the cultivator should see that the soil is open, sweet, and not too moist. Lime will help to keep the soil in good condition, and afford an antidote against too much organic manure. Gas-lime, applied in the autumn, is the best soil fumigant for wireworms; also sulphate of iron or copperas applied at a quarter-ounce per square yard. Salt or kainit may be applied in autumn, but, unless on heavy soil, it can be used at any time. Soot is sometimes advised against these pests if it is well dug into the top two or three inches of soil. When these two insects are expected in a garden, all plants should be given nitrate of soda, or some quick-acting manure, to hasten them past the seedling stage of growth, which is the most susceptible and critical period of plant-life. Slugs and snails are dealt with most effectively by means of hand-picking, after a shower or watering, and the marauders thrown into a can of hot water. Salt, soot, and lime—the first especially—are three good destructive agents, also preventives, as the slimy creatures abhor them. Worms succumb to the application of lime-water. Caterpillars should be gathered by hand, as they are so easily found; a dusting of soot or lime will prevent their attacks, and, indeed, rout them effectually even in the midst of their depredations.

LITTER AND THE FROST.—The farmyard and stable and the manure-heap, and many things close to our hands in the autumn, make capital litter for sheltering such things that need protection from the frost and very cold winds. Common bracken makes a light and warm covering for many tender subjects. Pea litter, if spread out and dried, may be utilized. Rushes and sedges, laced together, will be found of service for putting over framelights when mats are not to be had.

BURNING GARDEN REFUSE.—The refuse of a garden may be utilized and put to a good purpose, or it may be allowed to become a great nuisance. All prunings, weeds, and decayed vegetables should be burnt, and the ashes returned to the soil, which they will make more fertile. Never dig in to the soil wood prunings or a fungus will grow from them as they decay. Burn everything of a woody nature.

THE MULCH.—Materials spread upon the ground in considerable thickness to conserve moisture in dry weather, which may be stable manure, sewage refuse, grass cuttings, charred refuse, bracken, cocoa-fibre, the rotted portion of refuse-heaps, peat-moss litter that has been used in poultry-houses, etc., rotted turf, leaves, etc. The mulch must be removed from the crops in continued wet weather and when ripening of bulbs, etc., is imminent; and the stuff may with advantage be dug into the soil at any convenient time.

THE APPLICATION OF WATER.—Rains, mists, and dews supply the bulk of liquids, but artificial waterings are often necessary. These are given morning or evening (not while the hot sun is upon the crops), and the hoe should be used upon the ground immediately after. This action creates an inch or two of dry dust upon the surface of the soil, which acts as a protection from the absorbing rays of the sun, thus enabling the moisture beneath to benefit the roots.

HOME-SAVED VEGETABLE SEEDS.—Choose the best-shaped, largest, and generally well-appointed bulb, tuber, or root, and replant in good soil; or allow an exceptionally fine plant to run to seed. The seeds are gathered when quite ripe; or, rather, the whole plant is then pulled up, and hung in the sun or warm shed to dry. The seeds must be kept in a perfectly dry place until used.

PROTECTION AGAINST BIRDS AND ANIMALS.—Wire, rope, or fish-netting should be provided for seed-beds, nursery-beds, and rows of young Peas, etc., as a protection against birds, cats, dogs, etc.; the netting must be raised quite a foot from the ground, with all the sides and ends shut in, or birds, especially, will find their way inside. Cotton or thread—a *single* line is most effective—is a good protection against birds; for striking against unseen threads alarms them, and drives them away. Bright-coloured papers, tinsel, glass, tin, etc., placed so that the wind moves them violently, are useful as bird-scarers; also old tins knocking together in the breeze; but birds are becoming used to such artifices, and require something more effective. Netting supplies this. Seeds, etc., may be protected from, mice, birds, and insects by being treated with paraffin, red lead, soot, and lime; but here, again, a close-meshed netting often proves the best safeguard.

STERILIZING THE SOIL.—The compost is placed in a large shovel, and held over a fire until it is heated through, so hot that the fingers cannot be borne in it—a temperature of about two hundred degrees. This will destroy all insects and fungi which may be in it. Another way is to pour boiling water on the compost, but this makes it very wet, and there is some little danger of the seed rotting instead of coming up if the temperature should be rather low. But the soil should always be thus treated well in advance of the time when it will be used.

CALENDAR REGULATING VEGETABLE CULTURE

IN studying this Calendar, the gardener must recognise the fact that while no two months are really alike in weather conditions, it often happens that there is but little difference in this matter between two consecutive months, so that such two months may be classed as one period for gardening purposes, and the operations suited to both carried out whenever suitable opportunity occurs. There is *no* hard and fast rule ; it depends upon the locality, state of the weather and soil, and the gardener's convenience as to what should or should not be done at a certain period of the year.

JANUARY.—This should be considered the most important month in the garden calendar, for it is a time of study and planning. Every thoughtful gardener will now be devoting his energies to the arrangements for next year's crops—how he shall divide his available garden ground fairly between the subjects he intends to grow ; what those subjects shall be ; where he shall purchase his seeds ; and numerous other items of procedure. If the weather is favourable, by all means get to work outside—digging, trenching, manuring ; but do not attempt anything of the sort if the weather conditions are not agreeable. Seeds of Celery, Leeks, Tomatoes, Cucumbers, Celeriac, and Cauliflowers may be sown in a brisk heat under glass.

FEBRUARY.—In some respects, the outlook for this month is similar to that of January. If the weather is of a fair nature, however, seeds of Parsnips, Onions, and Broad Beans may be sown, but not if the soil is in a bad condition, and Shallots should be planted. Attend to seedlings under glass ; see that they are placed, in heat of course, quite close to the glass. Do not delay the purchase of seed Potatoes ; box them, and expose them to light in a frost-proof building.

MARCH.—The first of the " sowing " months. The weather, however, is often unpropitious, and sowings, except of the more hardy subjects, should be deferred till next month. At all events, Shallots, Onions, Turnips, Parsnips, Peas, Spinach, and Broad Beans should be got in ; while on a warm border Shorthorn Carrots, Lettuces, and Radishes may be sown. Sow seeds of all kinds of Greenstuffs. If fair weather obtains, sow Carrots ; Potatoes (early kinds) may be planted. Sprinkle superphosphate and soot in all seed and potato drills. Dig, manure, and clear the ground of all rubbish by burning, etc. Sow Dwarf Beans, Peas, Maize, Cauliflowers, Broccoli, Brussels Sprouts, under glass. Plant Seakale.

APRIL.—The second " sowing " month ; and the most reliable. Seeds of nearly every vegetable of a fairly hardy or main-crop nature should be sown now ; and towards end of month, Beet, Chinese Artichokes, Dwarf Beans, Asparagus, Chives, Oka, Seakale, Salsify, Scorzonera, Skirret,

Herbs, etc., may with safety be sown. An ideal month for planting main-crop Potatoes, Garlic, Cabbage, Lettuce and Onion plants. Keep plants under glass growing steadily.

MAY.—The third and "safe" sowing period; also general planting-out time. Runner Beans, Herbs, Swede Turnips, and other tender subjects may now be sown; as well as any additional seeds that may be necessary to supplement the earlier sown crops. Plant out, at end of month, Tomatoes, Marrows, Cucumbers, Pumpkins; or sow seeds outdoors of the three latter subjects. Onion, Leek, Globe Artichoke, Bean, Lettuce, and similar plants raised under glass should now be planted out. Give water if weather is dry. Use the hoe around growing plants; earth up Potatoes gradually; thin out all crops; destroy weeds mercilessly; apply soot, salt and lime to prevent insect attacks. Successional crops of Lettuce, Turnips, Spinach, Peas, Radishes, and Salad Onions may be sown every two or three weeks from now until August.

JUNE.—A period of cultivation. The hoe should be the principal tool in evidence this month, stirring and loosening the soil around plants, destroying weeds, etc. If weather is dry, use the watering-pot first. Plant out Marrows, Ridge Cucumbers, Tomatoes, Pumpkins, and other tender plants; sow seeds for successional crops of Peas, Beans, Salads, etc. Gather early crops for immediate use; do not let them become too matured. Give liquid manure and clear water in dry weather; and also a mulch. If wet, use the hoe vigorously after rain to assist drainage.

JULY.—A replica of June, so far as operations are concerned. A second batch of early kinds of Potatoes may be put in now ("seed" tubers may be saved from the lifted crops). Train, water, and generally assist vegetable-fruits outdoors to make rapid growth. Several early crops will begin to mature, and should be harvested carefully.

AUGUST.—A month of harvest. Also, towards the latter end, of sowing for winter crops. Winter Radishes, Spinach, Lettuces, Onions, come under the latter operation. The weather may be dry and hot; and if so, plenty of water must be in evidence. Crops, as they mature, should be thoroughly dried—in the sun, if possible—and stored.

SEPTEMBER.—The second harvest month; also for the continuation of August seed-sowing. The late crops are maturing fast now. Seeds of Spring Cabbages should now be sown. Dig and manure all vacant ground.

OCTOBER.—The third harvest month for the latest crops. A trial row or two of Early Peas and Broad Beans may be sown; also seeds of Cauliflowers sown under glass to be transplanted into frames to negotiate the winter. A capital period for trenching, ridging, and general digging the soil. Also for the application of lime, soot, and organic manures.

NOVEMBER.—A month of uncertain weather, probably restricting outdoor operations. The latter will consist mainly of protective work, so far as crops still in the ground, and young plants, are concerned. An excellent time for ridging the soil.

DECEMBER.—A replica of November, often even in weather conditions. If wet, little or nothing can be done outside; but if dry, digging, trenching, and ridging may be continued putting manure down deeply in subsoil.

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